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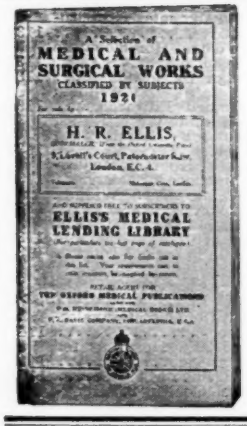

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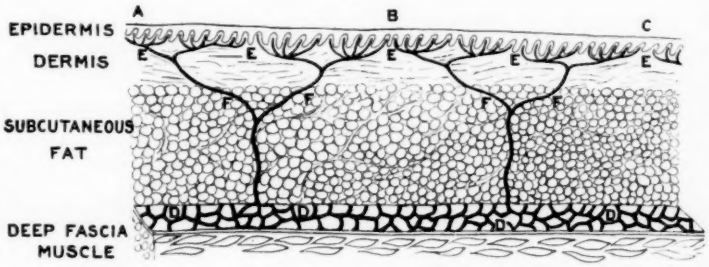
THE subject of my lecture lies on the border-line between surgery and dermatology, and my interest in it was first excited by a case referred to me for operation by my colleague, Dr. J. J. Pringle. I shall here deal only with the surgical pathology of lupus—that is to say, with those aspects of its pathology which have a direct bearing upon its operative treatment. It is no bad test of a lecture or paper to ask the author to write a précis of it on a visiting card. If to-night I had to submit to this test, my summary would run as follows: Tuberculous lupus is not a skin disease. It is essentially and primarily a disease of the lymphatics, a destructive lymphangitis of the parietal lymphatic system. I hope to show you that this conception is not a sterile one—that it has importance both immediate and prospective with regard to the treatment of this obstinate disease. Concerning the nature of the pathological process by which lupus spreads, various hypotheses have been held. It has long been admitted that a lupoid focus, wherever it is situated, may sooner or later infect the lymphatic system; but the phenomenon has always been regarded as secondary, and no conclusion has been drawn from it as to the essential nature of the morbid process at the primary focus of inoculation. From my point of view the essential event for the establishment of lupus is the inoculation of the bacillus into a cutaneous lymphatic vessel. The primary lesion is from the beginning a tuberculous lymphangitis, at first of the dermal lymphatics, but soon, of anatomical necessity, the process spreads to the subcutaneous lymphatics and to those of the deep fascial plexus. I shall try to show firstly, that upon the hypothesis that lupus is a destructive capillary lymphangitis, many hitherto unexplained phenomena of the disease become easy to understand; secondly, to place before you the direct histological proofs; and thirdly, to consider the bearings upon operative treatment of the knowledge thus acquired. Lastly, I may venture with all reserve to offer my dermatological colleagues a few suggestions in non-operative therapeutics.

LYMPHATIC ARRANGEMENTS OF THE SKIN.

The descriptions of the lymphatic arrangements of the human skin found in the text-books are meagre, and I have had to rely mainly upon my own observations, derived partly from lymphatic injections, but chiefly from the perfect natural injections of the cutaneous lymphatics which are sometimes seen in melanotic sarcoma and in Paget's disease of the nipple. The lymphatic vessels take their origin in the papillæ of the skin as blind finger-like end-sacs lined by endothelium. It is of importance for my present purpose to note that just as a lacteal is the central structure of an intestinal villus, so a lymphatic end-sac is the central structure of a skin-papilla. This fact permits of the identification of lymphatic vessels in sections of skin, no longer with probability, but with absolute certainty. As in a villus, the blood capillaries surround the central lymphatic. Just as the fingers of a glove unite in the palmar region, so these lymphatic end-sacs join by small groups to form primary lymphatic vessels. The analogy of the hand is imperfect, in that these primary lymphatic vessels are actually of smaller diameter than the end-sacs which unite to form them. The region where the end-sacs are uniting by groups may be called the plane of primary confluence. I ask you to note particularly that it occupies the superficial third of the thickness of the dermis, and produces in this region the false appearance of a plexus, the so-called sub-papillary lymphatic plexus. (Fig. 1.)

The deeper two-thirds of the dermis appear poor in lymphatic vessels. Those which are seen run more or less vertically downwards. Just beneath the dermis, in the superficial layer of the subcutaneous fat, these vessels unite by groups to form secondary lymphatic vessels which run along the fibrous septa of the skin and empty themselves into the fascial lymphatic plexus. Accordingly, just beneath the dermis, where this zone of secondary confluence is found, a pseudo-plexiform arrangement of the lymphatic vessels is seen. This false plexus was described by Arnold as the deep cutaneous plexus. The fascial plexus into which the cutaneous lymphatics discharge is a true plexus. It is a unity investing the whole body, offering no barrier to the unrestricted spread of infection, and lying upon or in the deep fascia. It discharges by trunk lymphatics into the cervical, axillary, and inguinal glands.

FIG. 1.



To show the lymphatic arrangements of the skin. A schematic vertical section of the skin and subcutaneous fat, with a small horizontal shelf of deep fascia projecting forward from it. Below this is muscle in vertical section. AB and BC are two of the primary lymphatic areas of the skin. These areas measure one-third to half an inch in diameter, and the only lymph-vascular communication between them appears to be by way of the subjacent fascial lymphatic plexus DDDD which is seen on the flat. The lymphatic end-sacs of the skin-papillæ unite by groups of five or six to form small lymphatic vessels, which again unite in the superficial third of the dermis (plane of primary confluence EEE) to form other lymphatic vessels, which pierce the dermis vertically and unite just beneath it (plane of secondary confluence FFF) into a smaller number of vessels which run down through the subcutaneous fat to discharge into the fascial lymphatic plexus DDD.

It will be noted that, according to the foregoing account, the skin would appear to be divided into independent lymphatic areas, whose only lymphatic communication with each other is by way of the fascial lymphatic plexus. The communications resemble those in a ship with water-tight compartments closed, but the plane in which they take place horizontally is a deep one—the bilge and not the deck. Judging by the size of the primary lesions in certain skin eruptions due to lymphatic obstruction, confirmed by observations upon areas of skin permeated by cancer, the primary lymphatic areas of the skin appear to be about one-third to half an inch in diameter. There is one other fact of lymphatic anatomy upon which I must insist—namely, that in close company with each small artery and vein, one or more often two comitant lymphatics are seen. Both in cancer and in lupus serious consequences to the blood-vessels arise from this close association.

LYMPHATIC PATHOLOGY.

A few points in general lymphatic pathology must next claim our attention as bearing directly on the subject in hand. Perhaps the most constant and striking result of obstruction of the cutaneous lymphatic system is papillary hypertrophy. It may occur from increased transudation without lymphatic obstruction, but, broadly speaking, it must be regarded whenever it is found as strong prima facie evidence of the presence of lymphatic obstruction. In my opinion, lymphatic obstruction is the primary cause of papillomata of all varieties. It is seen at its maximum in elephantiasis. In artificially produced lymphatic œdema of the rabbit's ear, as studied by S. C. Shaw and myself, it is the salient feature of the cutaneous changes. In Paget's disease of the nipple, which as I have shown is due to permeation of the skin lymphatics of the nipple, considerable papillary hypertrophy takes place. Another evidence of lymphatic obstruction is lymphangiectasis—dilatation of the lymphatic vessels in connexion with the obstructed part of the system.

Generally speaking, lymphatic obstruction is incompetent to produce papillary hypertrophy unless it is associated with increased transudation from the blood-vessels. In the classical experiment of Starling, when a cannula was introduced into a lymphatic trunk of the limb of an animal, no lymph flowed until the muscles were put into action or the veins also were obstructed. Then a copious flow occurred. Apparently the lymphatic conduits are idle luxuries except in an emergency. It would appear that if lupus is a lymphangitis, and especially if to the lymphatic obstruction thus created there is superadded a certain degree of venous obstruction, papillary hypertrophy will be produced. I shall be able to show you that it is a characteristic feature of the disease. A presumption is thus raised that venous obstruction with increased transudation is present in lupus. This proves to be the case, and I shall later discuss the mechanism of its production.

The intimacy of the relations between lupus and the lymphatic system attracted the attention of Leloir, who in 1888 published an important paper entitled "Le Lupus Vulgaire et le Système Lymphatique,"[1] of which it will be necessary to give a brief summary. He expressly states that he regards the alterations of the lymphatic system as secondary complications of the lupus. He first draws attention to the areas of local lymphatic œdema and pachydermatous skin which may be found near areas of lupus. He next describes, in the skin near lupus patches—especially of the ulcerative variety—acute or subacute attacks of lymphangitic œdema, or of reticular lymphangitis presenting the characters of erysipelas. Sometimes these attacks coincide with necrobiotic softening, or rapid interstitial absorption of lupus nodules. These attacks vary in acuteness and extent, and in the closeness of their resemblance to erysipelas. Most often on the face they assume the characters of the so-called strumous or white erysipelas. They may be afebrile or accompanied by pyrexia up to 38° to 40° C., with more or less definite febrile symptoms. Leloir distinguishes them from true erysipelas which may also attack the subjects of lupus. The lupoid pseudo-erysipelas is less acute in its course, and does not invade the hairy scalp. Its edge is less defined, and the swelling is as it were flattened out. It is often white.

In some cases after such attacks, crops of fresh tubercles appear in continuity with the original patch or in its neighbourhood, or even at a certain distance away from it. These secondary or metastatic eruptions may be either ulcerative or not. In other cases, as may be seen most clearly in the limbs, the tuberculous virus of the lupoid patch in the dermis extends by means of the lymphatic vessels, ascending thus towards the root of the limb. Thus are produced cord-like lymphangitic thickenings along the lymphatics presenting in their course tuberculous gummata and tuberculous enlargements of the glands. Ultimately the lung on the affected side may become tuberculous, an event signalised by the onset about a week after an erysipelatoid attack of a fresh febrile attack and the appearance of physical signs of apical tubercle. I shall later refer to the treatment of these interesting cases, which appear to have been first described by Leloir.

Leloir next deals with enlargement of the lymphatic glands as seen in lupus. These enlargements are, he states, a stage in the centripetal march of the tuberculous virus. He admits that non-tuberculous glandular enlargements may occur in lupus, from local irritation and secondary infections of the lupoid patch, but maintains that many of the enlarged glands bear to the lupus patch the same relation that the glands in secondary syphilis bear to the primary chancre, and that they are due to infection by bacilli from the lupoid patch. Leloir proved his point by experimentally producing tubercle in animals with material taken from enlarged glands in lupus patients. He showed that tuberculous secondary glands may occur both in the ulcerative and the non-ulcerative forms of lupus. He pointed out that the glands were not necessarily caseous, or much increased in size, that they might present only miliary tubercles, and hence often escape observation. On the contrary, especially in ulcerative lupus, the glands may become very large, may soften, and burst, leaving open sinuses.

Secondary glands may disappear by interstitial absorption or by sclerosis. The glands which remain small, indolent, and elastic (resembling secondary syphilitic glands) are more likely than the large suppurating glands to lead to pulmonary or general tuberculosis. Leloir believes that, to arrest the march of the disease, enlarged tuberculous glands observed in a lymphatic area where a lupoid patch is situated should be eradicated. He has several times seen phthisis begin a few days after fugitive enlargements of the lymphatic glands had appeared and subsided.

SPREAD OF LUPUS.

The absence of anastomotic communication, except by way of the fascial plexus, between the adjoining primary lymphatic areas of the skin prevents the direct spread of pathological processes along the skin by way of the lymphatic vessels. They can only spread by first descending along the lymphatics tributary to the fascial plexus, by then spreading in the plane of the plexus, and by re-ascending to the skin to invade adjoining primary lymphatic areas. It results that though the general trend of such processes is centrifugal, it takes place not by continuity, but by the appearance near the primary lesion of punctate skin nodules which may subsequently merge into it. This is the characteristic mode of spread of carcinoma and melanotic sarcoma. (Fig. 2.)

It is highly significant that the same peculiar mode of spread is seen in lupus. Treves (System of Surgery) distinguishes between the spread of the primary focus of lupus at its edge and the formation of fresh spots in the vicinity. Stelwagon also draws attention emphatically to this peculiarity of the disease. It is, I submit, determined in lupus, as in malignant disease, by the anatomical peculiarities of the lymphatic system. There is a further point of similarity between lupus and malignant disease. It is a peculiarity of the malignant growths which disseminate by permeation of the lymphatic system that the secondary deposits are nodular. I have shown that in carcinoma the secondary nodule is often formed by the extension of permeation from a permeated lymphatic into the arborescence of minute lymphatics which unite to form it. I think I shall be able to convince you that the nodules of lupus originate in the same way by the extension of lymphangitis into the initial arborescence of an infected lymphatic vessel. I believe I can answer the question "Why is lupus nodular?"

[1] Le Lupus Vulgaire et le Système Lymphatique (Radicules, Vaisseaux, Ganglions), by Prof. H. Leloir.

Histological Evidence.

There is much histological evidence of the intimate relations of lupus to the lymphatic system, and some histologists have maintained, though they could not prove, that the disease spreads by the lymphatics. It is commonly stated that in lupus there is a down-growth of the interpapillary cell columns of epithelium. This fallacious observation is a testimony to the occurrence of papillary hypertrophy. The inter-papillary cell columns are passively stretched and then laterally compressed by lymphœdema of the intervening papillæ. Dilated lymphatics—the result, evidently, of lymphatic obstruction elsewhere—are frequently described. Time forbids me to linger on this subject, or to summarise the mass of literature connected with it.

Failure of Lupus Carcinoma to Disseminate.

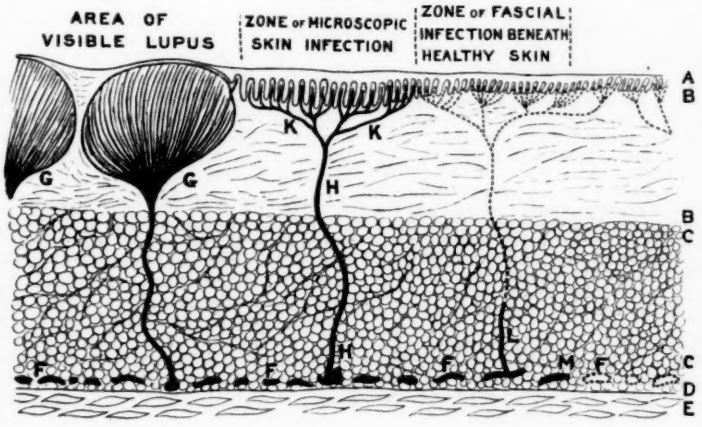
I have at present under my care two cases of lupus carcinoma. In neither case had there been any radiological treatment prior to the onset of malignant disease. In both cases, although the disease is very advanced, there is no indication whatever of any enlargement of the lymphatic glands. Now this is exactly what might be expected if a carcinoma arises in a region where the lymph vascular system has been previously destroyed. On referring to the literature, with the kind assistance of the librarian of the Royal Society of Medicine, I found that in a collection of 122 cases Ashihara [2] found only 16 cases in which the glands were involved. In these 16 cases it may be assumed with great probability that either the disease had infiltrated into regions of intact lymphatics beyond the lupoid area or that the glands were tuberculous and not malignant. Here, then, is a striking fact which receives an easy and natural explanation upon the view that lupus is essentially a destructive lymphangitis. In one of the earlier editions of Sir John Bland-Sutton's book on "Tumours" there is a comment upon the failure of lupus carcinoma to disseminate. To Wild is attributed the explanation that dissemination is prevented by destruction of the lymphatic channels, but upon what evidence I do not know, since I have not found a reference to Wild's paper.

MICROSCOPIC CHARACTERS OF THE GROWING EDGE.

The great labour which has been devoted to the histology of lupus has hitherto failed to explain why lupus is nodular, why it affects the superficial third of the dermis, why it apparently spreads discontinuously, and why the disease is so obstinately recurrent, although due to an avirulent form of the tubercle bacillus. The fact is that histologists have not based their investigations upon lymphatic anatomy, and have concentrated their attention upon the confused pictures of the later stages of the disease instead of studying the early changes seen at its microscopic growing edge. I must now describe three cases in which I investigated the microscopy of the growing edge of lupus beyond the visible area of disease.

CASE 1.—A patch of warty lupus at the base of the index finger. The most striking feature of the section is the great papillary hypertrophy seen in its central diseased portion. Measurement shows that at one end of the section in healthy skin the papillæ measure two units on the micrometer scale. Passing across it they increase in length to 10, 12, and, as a maximum, to 20 units of the scale. Then a decrease begins, and at the other edge of the section the length averages only three units. At the edge of the affected area, where there is no papillary hypertrophy, the first change noted is that the centre of each papilla is occupied by a more or less solid column of endothelial cells irregularly arranged. There is here no round-celled infiltration. From the central situation of these endothelial cell-columns it may be inferred with certainty that they are derived from the proliferation of the lining endothelium of a lymphatic vessel. We see, then, that an endo-lymphangitis is present in areas shortly to be invaded by the centrifugal spread of obvious lupus. In the superficial layers of the subjacent dermis lines of similar endothelioid cells, often solid, but sometimes presenting a central lumen, can be seen. These lines show Y-shaped junctions and are arranged in a retiform manner. The appearances are just like those seen in an injected specimen of the skin lymphatics, and there can be no doubt that they represent an endo-lymphangitis of the dermal lymphatics, for their continuity with the undoubted central lymphatics of the papillæ can sometimes be traced.

FIG. 2.



Schematic vertical section of the growing edge of an area of lupus. From above downwards the epidermis A, dermis BB, subcutaneous fat CC, deep fascia D, and muscle E are seen. The disease is spreading from left to right. At the right edge the normal lymphatic system of the skin is represented by dotted lines. Just under the epidermis are the papillary end-sacs, uniting in the superficial dermis (plane of primary confluence) into small lymphatic vessels, which again unite to form vessels piercing the dermis and emptying into FFFF, the fascial lymphatic plexus. At the left edge of the figure are two primary lupus nodules, each formed by the destruction of an arborisation of lymphatic vessels. The lymphangitis has spread along FF, the fascial lymphatic plexus towards the right, and has re-ascended the vessel HH to produce early infection of its arborisation KK. It is also beginning to ascend the remoter vessel L. In the deep fascial plexus it has spread beneath healthy skin to the point M. The secondary confluence of the lymphatic vessels just deep to the skin is omitted for the sake of simplicity.

Passing on, we note that the papillæ begin to show hypertrophy, and that around the retiform columns of endothelial cells collections of inflammatory round cells begin to appear. They form a definite band in the superficial layer of the dermis just like that seen in Paget's disease and in elephantiasis. This plane of the dermis is the plane of primary confluence of the lymphatic capillaries, and the concentration of the round-celled infiltration in this layer and in the papillæ is an additional proof that the disease is a lymphangitis. The round-celled infiltration appears to arise from the inability of the leucocytes brought by the blood-stream to pass away along the blocked lymphatics. In the deeper dermis accompanying the blood-vessels are lines of round-celled infiltration and epithelioid cells. Since lymphatics are comitant to blood-vessels the nature of these appearances is clear. They represent lymphatics blocked by lymphangitis and surrounded by round cells which find their natural way of return cut off. We now reach a region of great papillary hypertrophy where the papillæ and the superficial third of the dermis are converted into granulation tissue containing giant cells. These giant cells tend to follow the line of the lymphatics in a very definite way. Sometimes a line of giant cells can be seen occupying the situation of a lymphatic in the centre of a papilla. At other times a vessel with proliferating endothelium but with a lumen still distinct can be seen to tail off into a line of giant cells which follow the line of the original lymphatic.

[2] Ueber das Lupus-Carcinom, by Dr. N. Ashihara (Archiv für Dermatologie und Syphilis, 1901, p. 193).

These appearances leave no doubt that the giant cells arise from the proliferated endothelium of a lymphatic vessel.

We have not yet considered the appearances found in the subcutaneous tissue beneath the skin. They are scanty, but very significant. In the perivascular tissue accompanying a small artery and vein may here and there be seen linear collections of granulation tissue containing an occasional giant cell. From their situation we infer that these appearances result from the tuberculous infection and subsequent destruction of a comitant lymphatic. Infection of the subcutaneous lymphatics in lupus is not a rare phenomenon, and has been frequently recorded by Leloir and others. Here is evidence that lupus is not confined to the skin, and is not, properly speaking, a skin disease at all. The skin provides a portal of infection and a rich lymphatic plexus in which the initial stages of the disease are located, but the subcutaneous lymphatics are soon infected.

Infection of Fascial Plexus.—Their infection certainly implies infection of the fascial plexuses into which they run. Though in this case I cannot demonstrate it histologically, it was sufficiently shown by the clinical presence of lymphangitis of the trunk lymphatics. If, as I maintain, infection of the fascial plexuses is constant in lupus, the intractability of lupus to treatment aimed at the diseased skin is easy to understand. The scraping or even the excision of the diseased area of skin is merely the equivalent of mowing a bed of nettles, for the roots of the disease—the infected lymphatics of the subcutaneous tissue and the deep fascia—remain untouched to reproduce it.

CASE 2.—The second specimen was a small patch of lupus, about half an inch in diameter, on the upper arm of a little girl. It had apparently been ulcerated, but when excised it presented a central scarred area surrounded by a collarette of slightly raised, reddish, sub-epithelial nodules. I shall only describe the appearances found in the visible patch of lupus by saying that the papillæ were much hypertrophied, and that from the centre of some of the papillæ lines of granulation tissue representing destroyed lymphatics passed down to fuse with the subjacent lupus nodules composed of similar tissue. Some of the nodules tailed off below into stalks of granulation tissue running with the blood-vessels. Both these facts point to the origin of the nodules by proliferation of the related group of lymphatic capillaries.

We now pass to the conditions found at the growing edge beneath apparently sound skin beyond the furthest lupus nodule. From the granulation tissue "stalk" of this nodule a side branch of granulation tissue passes out obliquely and can be traced right up to a papilla of the adjoining skin, into which it is prolonged. Thus a Y-shaped arrangement is seen, the left limb thick and formed of typical lupus tissue, the right limb slender and represented by a chronically inflamed lymphatic. The whole arrangement is a diagram showing how a lupus nodule arises. The left half is completed, the right half is an outline drawing. The process is evidently spreading from the depth to the surface, for several of the skin papillæ within the area of the Y are normal and show as yet no lymphangitis. Further away from the edge, V- or Y-shaped cords of granulation tissue occur at fairly regular intervals in the superficial dermis over a distance of about one-tenth of an inch. Some of the skin papillæ are healthy, others show lymphangitis. This would not be the case if the disease were spreading in the plane of the papillæ. A fortunate section in this region shows one of the infected dermal lymphatics opening out like a stag's antler into about half a dozen infected lymphatics of origin which can be traced right into the centre of the papillæ, and their character of lymphatics thus proved. This particular section is a complete demonstration that in its early stages, before the picture has become blurred and confused by unlimited proliferation and nodule formation, lupus is a lymphangitis. We have before us not a complication of lupus, but lupus itself in the initial stage. Beyond this point the evidences of infection become indistinct, but they can be traced in skin papillæ situated one-eighth of an inch from the visible edge, and possibly a little further. Hypertrophy of the papillæ could be traced about the same distance.

Evidence of Subcutaneous Infection.—The condition of the deep fascia could not be directly investigated, but its lymphatics were certainly infected, for tuberculous lymphangitis of the trunk lymphatics was present.

CASE 3.—The third specimen investigated was a strip of tissue excised beyond the growing edge of a case of lupus erythematosus. I shall not detain you with the histology of this specimen. Papillary hypertrophy is absent. It showed upon the deep fascia a quarter of an inch beyond the furthest point of disease in the skin, a cord of round cells accompanying a blood-vessel. This case provides distinct microscopic evidence that the disease spreads in the fascial lymphatic plexus. I found similar evidence in another specimen of lupus of the forearm, but the evidence of disease in the deep fascia is scanty and difficult to get, for excised specimens rarely include this layer. The evidence justifies the conception of the nature and spread of lupus embodied in the diagram. (Fig. 2.)

Growing Edge of Breast Cancer.

There is a great similarity between the spread of carcinoma in the parietes and the spread of lupus, in its clinical as well as in its histological aspects. Let me briefly recall that a patch of lupus arising on the hand may give rise to a ring of satellite nodules, and may infect the trunk lymphatics, may cause enlargement of the bicipital, the axillary, and the supraclavicular glands, and may finally attack the corresponding lung, a sequence of events which is also seen in an epithelioma arising in the same situation. On the contrary, either lesion may remain purely local. The clinical evidence thus bears out my microscopic conclusions as to the general similarity between the spread of lupus and the dissemination of carcinoma. How should it be otherwise if both diseases spread—mainly by continuity though partly by embolism—in the lymph-vascular system? The anatomy of that system is the same whether the patient suffers from carcinoma or from lupus. It determines the direction of spread in spite of the fundamental difference between the pathological processes involved—permeation in carcinoma, proliferative lymphangitis in lupus. If my conclusions are accepted the similarities between lupus and carcinoma are seen to be neither superficial nor fundamental; they result from the simple fact that the two diseases use the same highways.

Causation of Vascular Congestion and Necrobiosis.

The destruction of the lymphatic vessels and their replacement by cords of tuberculous granulation tissue involves results of great moment for the blood-vessels. When the lymphatic vessels have been destroyed, the relatively thick and diffuse cord of granulation tissue which replaces them envelops and ensheaths the accompanying blood-vessels. Like all granulation tissue it tends to contract, and pressure is thus exerted upon the blood-vessels. At first the vein is chiefly affected, and a venous stasis is produced which reddens the affected area of skin. Increased transudation of blood fluid follows, and if this stage is sufficiently prolonged hypertrophy of the papillæ of the skin results from the combination of increased transudation with lymphatic obstruction. Thus the more chronic forms of lupus tend to assume a warty form. If, however, the tuberculous process is more rapid, venous obstruction, with its accompaniment of increased transudation, is only a fleeting phase. The pressure of the contracting granulation tissue soon affects the arterioles, restricts the blood-supply, and diminishes transudation. Under these circumstances we find, instead of warty hypertrophy of the skin, a failure of nutrition in the overlying skin and in the tuberculous tissue itself. Ulceration and caseous changes follow. The particular form which lupus assumes thus depends on the degree of pressure exerted on the blood-vessels by the contracting granulation tissue which forms around them as a result of the tuberculous lymphangitis of their comitant lymphatics.

TREATMENT.

It is in the surgical treatment of lupus that my observations seem for the present to find their practical application. It is very necessary to recognise the existence around the apparent area of lupus of a zone of apparently normal but really infected skin. Even in the chronic forms of lupus, this zone appears to be present. The knife of the surgeon must if possible circumscribe this area if he wishes to avoid recurrence. Even more important is it to recognise the fact that excision of the skin alone is an irrational procedure. It is almost certain that the underlying area of subcutaneous tissue is riddled with microscopic tubercle in the form of tuberculous lymphatics, and that a corresponding area of the lymphatic plexus upon the deep fascia is infected. Whenever possible, therefore—and it can be done in all cases of lupus of the trunk and extremities—an area of deep fascia at least as

large should be taken away in one piece with the area of skin excised. The test of the completeness of the removal is that muscular tissue should be seen in the floor of the resulting wound.

Excision.

Leloir, writing in 1891, condemned the excision of lupus, though he admitted that in certain exceptional cases excision followed by skin-grafting might be the only means of cure. English surgeons have not shared Leloir's dislike for the method. Thus Cheyne and Burghard (1903) consider that an early patch of lupus should be removed by an oval incision followed by suture. For such cases they consider the method ideal; in more extensive cases they advocate, wherever possible, excision followed by a plastic operation or by skin-grafting. The excision must be carried freely (at least a quarter of an inch) beyond the edge of the disease and well into the fat beneath, or it will not be successful. Dr. Arthur Whitfield—who, as dermatologist to King's College Hospital, no doubt had the opportunity of watching cases so operated upon—formed a high opinion of excision in early cases and found relapse "extremely rare." On the other hand, after excision of extensive lupus followed by skin-grafting, relapse occurred within the grafts in the great majority of cases. There is here a clear indication of the defects of the present method of excision. Although the plane of excision traverses the deep subcutaneous fat it leaves intact the subjacent infected lymphatic plexus of the deep fascia. The failure of excision conducted on these lines is an experimental proof of my contention that the deep fascial lymphatic plexus is the lurking place and the main channel of spread of the disease. This contention is not vitiated by the almost uniformly favourable results of the superficial excision of very early lupus, in which presumably either the deep fascial plexus is not yet infected, or the inflammatory reaction of the operation suffices to strangle fascial infection in an incipient stage.

Is it possible to devise a method of excision which shall accord with the conception of the disease as a capillary lymphangitis? The answer to this question will vary with the site and extent of the disease, but for certain cases, as on the limbs and trunk, it is in the affirmative. I have space only to describe the ideal method; I must leave it to you to judge of its limitations for any given case. In any operation those pathological facts must be taken into account of which I have offered proof: (1) That lupus is a destructive proliferative lymphangitis, only confined to the skin in its earliest stage. If the area affected exceeds half an inch in diameter it must be assumed for reasons of lymphatic anatomy that the subcutaneous tissue and the deep fascia are also infected. (2) That the disease is spreading in the deep fascia, not in the plane of the skin, and that accordingly the infected area of deep fascia is slightly larger than the infected area of skin. (3) That the visibly diseased area of skin is surrounded by a zone about a quarter of an inch wide in which microscopically tuberculous lymphangitis is already present.

Method of Operation.—The visibly infected skin must be circumscribed by a ring incision. In order to allow for the area of early microscopic infection, this incision must not come within a quarter of an inch of the visible edge of the disease. The skin edges must now be reflected back for a further quarter of an inch. The exposed area of deeper subcutaneous fat is then surrounded by a ring incision which marks out the area of deep fascia requiring removal. This area is raised from its edges towards its centre until the diseased deep fascia is removed. The surface of the muscles is exposed in the floor of the wound, which is sutured or skin-grafted.

Such an operation is obviously impracticable for extensive lupus of the face. In lupus of the limbs or trunk it should be the method of choice, unless the disease is very extensive. Superficial excisions, not including the deep fascia, are only allowable where removal of the latter layer is impossible on cosmetic or other grounds. They should always be supplemented by cauterising agents, which it may be hoped will excite sufficient reaction to destroy the foci of disease in the deep fascia. Skin-grafting should be deferred until the cauterised surface has produced healthy granulations. In such cases it may be doubted whether imperfect excision has any advantage over the older method of scraping combined with cauterisation. If the disease has spread to the trunk-lymphatics and the glands, the infected vessels and glands must be excised in one piece with the area of lupus (monobloc method of operation). A case which I described in the *British Journal of Surgery*[3] illustrates the successful application of this method. The patient remains well more than three years later.

Bier's Hyperæmia.

We have seen that a passive hyperæmia with increased transudation is normally present in lupus. It seems improbable that the artificial exaggeration of this characteristic feature of the disease should exert a curative effect. It might, indeed, be argued that the repair seen in the older central area of a patch of lupus is due to hyperæmia. But the presence of hypertrophied papillæ beyond the visible edge of the disease makes it probable that slight venous obstruction is present in the earliest stage of infection and obviously it does not interfere with the evolution of the disease. The conclusion seems justified that artificial passive hyperæmia is most unlikely to arrest the spread of lupus, and it is worthy of note that Bier has ceased to employ this method. He states: "With congestion hyperæmia by bandage I have seen no results or only transitory improvement of ulcerative lupus of the extremities."

Finsen Light Treatment.

Since sunlight is a notorious enemy of tubercle it is not surprising that the Finsen arc lamp, which supplies light rays deprived of their heat, has a curative effect on the cutaneous manifestations of lupus. It is instructive to note that the method is ineffective unless the surface acted upon is blanched and made transparent by the pressure of a quartz disc. Even when this is done the light rays can only be expected to penetrate to the superficial layers of the dermis. In other words, the action is a surface action. The superficial nodules disappear, leaving a good scar, but the results obtained are rarely permanent, though the treatment is prolonged, tedious, and expensive. If, as I have tried to prove, lupus is a capillary lymphangitis affecting the lymphatics of the subcutaneous tissue and the deep fascia as well as those of the skin, the failure of the Finsen light method to fulfil its early promise is easy to understand, for it cannot reach the deep fascia. It should be abandoned for methods more rational and effective.

Radium Treatment.

In the report of the Radium Institute for 1919, Dr. Hayward Pinch states regarding lupus vulgaris: "Cases of long standing which have proved non-amenable to Finsen light X rays, CO_2, snow, scarification, caustics, &c., are sometimes quickly and effectively cured by radium, and the treatment is well worthy of a trial when other methods have failed." It is advised that ulcerated areas should receive an unscreened exposure of one and a half hours, while indurated and non-ulcerative areas are best treated with long screened exposures. The screen should be 1 mm. silver or 2 mm. lead. It seems probable that the future will see an extension of radium therapy in lupus as the method of choice. Apart from its direct action on the tuberculous tissue, radium is known to have the power of exciting an aseptic lymphangitis, and in this way by obliterating the normal lymphatic vessels around the infected area it can probably stop the progress of the disease by an insuperable barrier. To those radiologists interested in the surface application of radium, I would suggest, as the best means of erecting such a barrier, an encirclement policy working from the sound tissues towards the diseased area. It must be recognised, too, that the layer to be effectively irradiated is the

[3] Brit. Jour. of Surg., January, 1920.

deep fascia, not merely the skin, and to this end gamma radiation from screened appliances must be employed. Treatment must be guided by microscopic conceptions, not by clinical appearances, and *must be mainly directed to the invisible growing edge, to the neglect at first of the visible lesion.* A rationally planned course of radium treatment on these lines should be more effective than the purely empirical treatment hitherto employed.

CONCLUSION.

The facts I have here discussed are fundamental for the treatment of lupus. The most profound study of bacteriology and chemical physiology could not have revealed them. They are the product of morbid anatomy, a branch of medical science temporarily out of fashion and by many wrongly supposed to be dead. I venture to urge that a revival of interest in morbid anatomy is necessary to the balanced progress of medical science. Those who depreciate it have failed to realise the recent advances in its methods. Its former cheese-tasting methods are out of date. The awakening of geology came with the realisation of the fact that the strata of the earth are frozen history. Similarly the dead tissue with which the morbid anatomist deals, if systematically examined, provides him with biograph films of the morbid processes which took place during life.

In conclusion, I must express my thanks to the present and past directors of the Bland-Sutton Laboratories of the Middlesex Hospital, Prof. J. McIntosh and Prof. C. H. Browning, for the facilities they have afforded me.

The Relation OF CRIME AND DELINQUENCY TO HEREDITY, ENVIRONMENT, AND DISEASE.

A Lecture given to Teachers at the London Day Training College on Oct. 27th, 1921,

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FIFTY years ago a remarkable theory relating to criminals was put forward by Lombroso—namely, that criminals constituted a distinct class, who could be recognised as conforming to a particular type, shown more particularly by the shape and size of their heads. Moral character was to be measured with a foot rule. Indeed, the science of criminology was to be even more simple, for not only could criminals be recognised, but also the nature of their misdeeds; after careful inspection the murderer, the thief, and the prostitute could be determined. Although discredited at first, Lombroso's theory gradually won much support. It derived credit from Lombroso's previous sound work, and also from the fact that it contains a germ of truth. Intelligence and good conduct do bear some relation to the size and shape of the head. It is impossible to have normal intelligence in heads below a particular size. It is an advantage to have a big head up to a point, but a skull of unduly large circumference is almost sure to contain a large brain of inferior quality. Some facts of that nature have been established, and are useful, but they only help us to diagnose a few of our abnormal cases and do not lead to the fine and universal distinctions Lombroso claimed. This method of diagnosis of criminals is now discredited. The death blow was given by the late Dr. Charles Goring, who examined an enormous number of prisoners and published the result in his famous work, "The English Convict." He established the fact that the criminal belongs to no particular type, although he is usually inferior to his fellows in stature, physique, and intelligence—a fact very different from that which Lombroso claimed to have established.

HEREDITY.

There is no criminal type. Numbers of criminals are often found in the same family, but so far as heredity is concerned, that only means they have inherited poor intelligence, weak physique, and so on. Well-marked criminal types show nothing more nor less than the abnormal cranial configurations we are accustomed to associate with a small percentage of mental defectives, such as the microcephalic and scaphocephalic. These particular configurations do not occur in more than 10 per cent. of defectives. But recent investigations have even thrown doubts on the inheritance of mental defect, as such, in many cases where it appears in a direct line. In one sense mental defect is essentially an hereditary character, but sometimes what is inherited is not a bad brain, but an inferior development of the thyroid and other so-called endocrine glands to which great importance is now attached. A function of some of these glands is the stimulation of normal development, particularly of the brain in fœtal life. This, however, is a controversial subject on which I cannot enlarge here; it does, however, make us think more of environment, because some of these glands are very sensitive to environment, particularly to infection of all kinds. The endocrine glands are of special importance during pregnancy, so that if we would diminish delinquency, some of our energy must be devoted to the ante-natal clinic.

In confirmation of Goring's findings I would quote from Dr. Healy, the great American authority on delinquency: "There are many kinds of criminals with all sorts of traits, and one would urge great caution in speaking of them in any way as a single group."[1] Then he quotes approvingly from Goring: "The physical and mental constitution of both criminal and law-abiding persons of the same age, stature, class, and intelligence, are identical. There is no such thing as an anthropological criminal type." Reflection will show that in a criminal family the environment and training, or lack of training, must affect the issue. Although Lombroso's theory has been disproved, there is a school who would explain delinquency in almost as definite and precise a manner—looking upon crime as largely indicative of mental defect. They start with the statement, which is true, that mental defect is more common among the prison population than the ordinary population, but even if they go on to the extravagant statement that 10 per cent. of all prisoners are defective (a fact not proved if the standard of intelligence indicated in the Mental Deficiency Act, 1913, is taken) it is hard to establish their point. For a large percentage have ordinary intelligence, grading as ordinary that exhibited by an average person brought up in similar surroundings with a similar education. The extremist would seem to beg the question by saying that only a small amount of mental defect is necessary to constitute a criminal, or that criminal conduct is a proof of mental defect. In the last resort it can be called moral imbecility. But the term moral imbecile often seems to me a cloak for ignorance. Nearly all the so-called moral imbeciles I have examined were mental defectives; the remainder suffered from some defect in physique, training, or environment, or—more usually—a combination of such abnormal conditions. This does not mean that the term "moral imbecile" is not a useful classification, provided it is only put forward on rare occasions; nor does it mean that the moral imbecile must at the present time be treated otherwise than by letting him meet the usual fate of his criminal acts. He is sometimes too dangerous to society to be at large, and we are sometimes too ignorant to deal with him in any other way than by punitive detention. But this diagnosis and treatment should be reserved for a small number only.

[1] The Individual Delinquent. William Healy, A.B., M.D. London: William Heinemann. 1914. P. 161.

Heredity, then, seldom explains delinquency, though bad heredity is often associated with it, because we can accept Goring's statement that the criminal is an inferior man; and such inferiority, whether of intelligence, physique, or what not, tends to be inherited. But if we study all the facts of a criminal family, we often find that an irregular family life, a lack of proper training or a definite training in wrong-doing, a faulty attitude to life and society, play a more important part. At one end of the scale we may have the hereditary criminal; at the other the delinquent, whose fate is entirely due to bad companions. I have never seen either of the extreme cases, but I have seen many intermediate ones containing an element of both, the causation usually being highly complex. Dr. Healy, after examining nearly three thousand delinquents, prepared a table which showed that only in one-sixth was heredity a factor, and even then it was only a minor factor.[2] As Dr. Healy says, the facts must be carefully sifted—e.g., a woman may be a prostitute, and the daughter of a prostitute, but both she and her mother may be the victims of environment.

When speaking of heredity we must recognise there is a psychical inheritance as well as a physical. The child may inherit the tendency to evade, rather than face difficulties; if the parents do not deal with their mental conflicts it is harder still for the children to face reality; but usually such weakness "acts like an infection rather than a transmission."[3]

ENVIRONMENT.

Delinquency must really be the result of all the numerous factors in the make-up and environment of an individual; it is not due to a special biological organisation. Dr. Healy[4] says "there are a few well-differentiated classes, such as the definitely feeble-minded, or the insane, or the senile dements, who readily commit crime." But "human beings have many-sided natures, and the variabilities in the proportion of this or that characteristic are immense." There is, therefore, "no fitting into single pigeon-holes." Environment, therefore, is of great importance, especially if we give it a wide interpretation. Social conditions have much influence; faulty hygiene tends to the development of the inferior man, and so predisposes to delinquency. No scheme for dealing with crime is complete that does not include social betterment. Healthy exercise and recreation must be possible for all. Training is important, especially that received at home during the earliest years of life. My experience of the habitual criminal is that he generally goes wrong very early. The so-called first offender is seldom really a first offender; it is his first appearance before the court, but some form of delinquency has usually been going on for years. Goring, when discussing habitual criminals, said that "the nodal, or commonest age, for recruiting, is between 15 and 20"; [5] but then Goring only ascertained the age, at their first conviction, of convicts. Those of us who have had the opportunity of examining cases in the children's courts, and studying abnormal conduct in the young, know that the critical period must be placed much earlier. Nearly all the young delinquents I have examined were on the wrong path at 10 years of age, and often earlier than that. The first offence is not necessarily of the same kind as the first conviction; for instance, stealing is often preceded by lying, in consequence of which the offender gradually gets a false conception of reality, if indeed he ever had a true one. It would be to the public advantage if more magistrates realised that the so-called first offender is not usually an innocent little person to be dismissed with a caution, but an individual on the wrong lines whose case requires thorough expert examination.

This leads me on to our modern conceptions of the springs of conduct and of the term environment. Take environment first, for that is the simpler of the two. It means not only the house and street in which the individual lives, but also the climate, opportunities for play, exercise, and so on; it means not only the persons in the home, but their attitude to life, the way they meet its difficulties; it includes also all the experiences of life, in short, the whole content of the mind, including the emotions, instincts, and ideals. The psychic environment, developed and fostered by the conduct and attitude of the home circle, is the most important. This environment exists in the mind and is carried everywhere with him by the individual. It requires investigation in most cases of abnormal conduct. Dr. Healy says that if we want to determine the causal factors in delinquency the prime consideration is the mental life of the individual. "Not only is this shown by the undue proportion of feeblemindedness, epilepsy, and insanity among delinquents, but also by the mental disappointments, irritations, and conflicts which very frequently are at the roots of offending careers." [6]

How are we to study the mental life of the individual? The mind is very difficult to explore. In recent years we have accepted and extended the conception of the mind as consisting of two parts, the conscious and the unconscious. The content of the conscious mind is small and limited; the unconscious mind is bigger and more comprehensive. The whole mind has been compared to an iceberg of which the part above the water is only a small fraction of the whole; the visible portion corresponds to the conscious mind, the larger and unseen to the unconscious. In some cases of criminality the explanation is simple, because the motive is in the conscious mind, a region comparatively easily investigated; but in many cases the springs of conduct are hidden in the unconscious, and absolutely unknown to the individual himself. We may have a shrewd suspicion as to what some of them are, but we cannot be certain till he recognises them too. It is the unconscious motive which explains those criminal acts in which the culprit gains nothing, or at any rate makes no use of what he does gain. Such a delinquent will often say, truthfully, that he had an irresistible impulse and cannot understand why he did it.

AN ILLUSTRATIVE CASE.

I will give you an example, selected because it is connected with the problem of the so-called moral imbecile. A youth of 18, of previous exemplary conduct, when out in the street after dark, felt an irresistible impulse to break into a house he was passing. He opened a window, got in, and picked up a few shillings he found lying on the table. He then walked to the front door, unlocked it, took out the key, and having locked the door on the outside, put the key in his pocket. He went home to bed. He did not require the money, having as much as he wanted at the time. Next morning he felt upset and sorry for the unfortunate people who were locked in their house. Accordingly he went back and dropped the key in the letter-box. A woman ran out after him, and said he must be the person who had broken into the house and taken the money; he admitted that he was. When this young man is examined we find that he is not highly intelligent, as he has a mental age of only 13. With such a mental age, however, it would be very difficult, if indeed possible, to certify him under the Mental Deficiency Act, especially as he has a good school record and got into the highest standard. The suggestion then comes that as he is somewhat unintelligent and has committed criminal acts he must be a moral imbecile, and should be treated as such. I consider that here such a course is far less justifiable than certifying

[3] Healy: Op. cit., p. 130.
[2] The Psychology of Phantasy, by Dr. Constance E. Long. London: Baillière, Tindall and Cox. 1920. P. 65.
[4] Healy: Op. cit., p. 161.
[5] The English Convict, by Charles Goring, M.D., B.Sc. Abridged edition. London: H.M. Stationery Office. 1919. P. 123.
[6] Healy: Op. cit., p. 163.

him as mentally defective. His attitude, demeanour, and record are quite different from my idea of a moral imbecile. On the contrary, with the exception of this and one other act of stealing when he took not money, but two articles he did not want and never used, his conduct has been exemplary; it has been that of the boy who is almost too good, except that at the present time he will not go to work. He may be suffering from incipient mental disease; in any case, we can only explain his conduct by studying his mental attitude. We have difficulty in classing him as mentally defective, because his intelligence is as good as that of large numbers of others of the same social class and education who are able to carry on quite well. We are, however, justified in regarding his limited intelligence as one factor in precipitating the present crisis. There must be other factors; those are to be found in the unconscious mind. This has not been thoroughly investigated, but help is gained by realising that he has a kind and indulgent mother, whose inclination is to shield her children in every possible way. The mother is not robust; the father is of similar temperament, with a record of serious ill-health, as he is a victim of consumption. He has struggled hard to bring up his family well, but is now breaking down under the strain; he has no longer a business of his own. We can easily imagine in such a home circle the growth and spread of a sense of inferiority and hopelessness of outlook; Providence seems to be against them. The boy himself is not strong, and when he feels a bit slack may have a suspicion that he will have just as bad luck as his father. The loving care that has shielded him has not promoted the development of grit. At the back of his unconscious mind may lurk the idea: "What's the good of my going to work? I can never hope to win through; at the best it is only postponing the evil day."

THE DELINQUENT'S SENSE OF INFERIORITY.*

Developed in one way or another, the sense of inferiority is often found in the delinquent. The boy who cannot see the blackboard at school, and who does badly because his defect is not recognised and dealt with, feels he is inferior and cannot compete on equal terms with his fellows; let the temptation or the bad example come, and it is a short step to crime. Yet if you ask him why he did it, he cannot tell you either of his eye defect, or of the idea that comes welling up from the unconscious to influence his conduct. Often the sense of inferiority is developed because the child is awkward or slow, and then his stupid parents tell him that he will never be any good, and are always dinning into him that the only suitable head-dress for him is the dunce's cap. One of the most satisfactory cases I ever had was a man who went to the university rather late in life, because whenever as a boy he spoke of visions of a degree and a profession he was always told, "What's the good of your thinking of a university; you would never pass the entrance examination, far less get a degree." He was told he was so stupid he must go into business, a vocation which to my mind requires ability, and in which he failed because he had neither interest not aptitude.

These cases are closely allied to the so-called father or mother complex, where the authority exercised by one or both parents is so absolute that the child has no opportunity of developing his individuality and coming into his kingdom. Sometimes excessive authority develops the rebel type, that type who is openly hostile to all authority and looks upon rules and regulations as only made to be broken. Do not think I am advocating spoiling children; far from it, for a spoilt child has the worst chance of all in life. There must be firm and wise direction of the growing life, but the weight of authority must be steadily diminished till it reaches the vanishing point as the young person ends his teens. We must have discipline from without at first, but we want to develop later on internal discipline, mastery over self.

THE SEX COMPLEX: UNWISE ADULTS.

I must remind you that those who have to do with delinquents often find a sexual complex. Something of this sort is the explanation of many cases of stealing or other impulsive acts. Here again the mischief is in the environment, and in the home in particular. There has been no simple dealing with the problems of sex and development by the mother as the children begin to wonder and ask innocent questions. How can they help thinking of the wonderful mystery of life? Later on, instead of learning gradually, their ignorant minds are flooded with a mass of false teaching, imparted in the wrong way by bad companions. Teachers ought to know how much sexual irregularity there often is in and around a school. Wise supervision and a few frank words with the individual can do much good; but you can never put matters right by formal teaching in class. It is always an individual problem to be dealt with privately. Nor must you ever speak to the individual unless you feel you can help him.

I have dwelt rather long on environment; that is because, putting aside the limited number of cases of mental defect and of gross disease, the environment seems to me the most important matter. A short time ago I was told about a child of known bad parentage who was adopted by a good and kind couple; the girl went hopelessly wrong. It was suggested that this must be due to heredity. I should be glad to have particulars of similar cases, because one case proves nothing, but in such a case there is a possible fallacy. In the first place the girl was brought up as an only child, which is not desirable. Then I should like to know why the foster parents had no children of their own. Was there any fault on their part, or did nature realise that they were not suitable to be parents? A short time ago I saw an orphan delinquent girl whose case threw some light on this matter. When I asked her why she was so unhappy, she burst into tears and said, "Aunties are not mothers." The child must have discipline, but discipline in the early years at least must be tempered by love. This girl gave me an instance of the bad influence unwise guardians may have. On one occasion, when she was in a room alone with a boy cousin, her puritanical uncle came in, and finding them together, at once accused them of misconduct. This unjust accusation permanently estranged the boy from his father, and might have produced the situation the father wanted to prevent.

DISEASE.

A few words will suffice for the subject of disease, which, like mental defect, must always be considered in connexion with delinquency. As already suggested, eye and other defects may be very important; there must be a thorough physical examination, not only for definite disease, but also for slight disabilities, which may be the basis of a mental conflict. The constitutional diseases, especially tuberculous disease and syphilis, are not uncommon in criminals, and may partly explain their abnormal conduct. Both call for appropriate treatment. Syphilis may be inherited, but as we see it, it is more often acquired and therefore due to the environment, where we may blame either injudicious home training or abnormal social conditions. Tuberculous disease is due to both heredity and environment; there is the inherited predisposition, or rather lack of resistance, and later on the faulty hygiene. Epilepsy is extraordinarily important; it is the explanation of some criminal acts, but is often overlooked, especially when of a mild type or in the incipient stage. I know one boy, who had several severe fits when under my care, who was subsequently ordered to be birched by a bench of magistrates. Fortunately the sentence was not carried out, although its remission was not due to recognition of his disease.

CONCLUSION.

I can best sum up the problem of crime by quoting from Goring. "The crusade against crime may be

conducted in three directions. The effort may be made to modify inherited tendency by appropriate educational measures; or else to modify opportunity for crime by segregation and supervision of the unfit; or else—and this is attacking the evil at its very root—to regulate the reproduction of those degrees of constitutional qualities—feeblemindedness, inebriety, epilepsy, deficient social instinct, &c.—which conduce to the committing of crime." [7] Goring then went on to say that we must have facts, and suggested that the results he had obtained might serve as a stimulus to a more extended inquiry, including the homes and haunts of the offenders. We must go beyond this; the inquiry most necessary now is into the mental life of the delinquent, on the lines on which Dr. Healy is working in America.

In conclusion, I would refer briefly to the Birmingham scheme for special medical examination of mental defectives and other persons of unstable mentality brought before the courts. This scheme was inaugurated because it was realised that in spite of the working of the Mental Deficiency Act, 1913, there were still mental defectives coming before the courts, and in some cases actually being sent to prison. What was intended in the first place chiefly for the benefit of mental defectives should have far-reaching consequences for the benefit of the more normal. It has given those of us who are concerned in the work the opportunity of showing that in addition to mental defectives there are a large number of other persons who ought not to be looked upon as fully responsible, because there is some psychic abnormality resulting from an environment over which they had no control.

THE JAW-NECK SYNDROME: ITS SIGNIFICANCE IN THE RHEUMATIC GROUP OF DISEASES.

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WHILE it is well-known that involvement of the temporo-maxillary joint is common in certain forms of arthritis and uncommon in others, the paramount importance of this point as a differentiating symptom in the diagnosis, and consequently in the treatment, of the so-called rheumatic diseases is not, I believe, sufficiently widely recognised. The whole heterogeneous medley of diseases generally and vaguely classed under the heading of "rheumatic" or gouty can be divided sharply into two groups, those in which the temporo-maxillary joint is involved, and those in which it is not.

Temporo-Maxillary Joint and Conditions due to Bacterial Toxins.

The importance of the division lies in the fact that if in any case of arthritis we find this joint affected, we can at once conclude that we are dealing with a condition due to some bacterial toxin, and can say definitely, confidently, and finally that it is *not* one of gout, however closely that disease may be simulated. Could we with any certainty define our conception of rheumatism and limit the application of the term to cover only rheumatic fever and those subacute and chronic cases which are its sequelæ or appear to be caused solely by climatic conditions, I would extend the axiom, and say that we can definitely exclude both gout and rheumatism. For while acute rheumatism is generally conceded to be due to microbic invasion, yet the toxin does not appear to select this particular joint.

A rheumatic or gouty person may, of course, have his jaws affected, for he is no more and no less immune than other people from the various toxins which affect the joints, but the jaw lesion is due to some secondary or superadded infection, and we may seek the underlying cause in gonorrhœa, rheumatoid arthritis, dysentery, oral sepsis, or in some other form of infective or toxic agency. One other and confirmatory symptom shares in this pathognomonic import—namely, pain, stiffness, and sometimes grating in the back of the neck just below the occiput. The cause of this pain is, perhaps, a little obscure, for the X ray appearances are variable, and post-mortem evidence in these cases is difficult to obtain. There would generally seem to be an arthritis more especially of the occipito-atlantoid or upper cervical inter-vertebral joints, but sometimes the symptoms seem to be caused rather by involvement of the spinous processes and of the periosteal and fibrous tissues in connexion with them, for in advanced cases there is often bony thickening of the cervical spines, with much fibrous matting about the back of the neck, while there may be no pain on vertical pressure, although this is, of course, inconclusive evidence.

Some light is thrown on the pathology of the condition by the experiments of Nathan,[1] who produced a polyarthritis in dogs by inoculation with streptococci, and showed that the vertebral changes were similar to those induced in the skeleton elsewhere—viz., endosteal and sub-periosteal inflammation, with a sterile intra-, peri-, and para-articular exudation. In the spine this exudate involved the epidural space and the vertebral notches, and caused root or spinal irritation or compression. This symptom is not met with in pure rheumatism or gout, it is nearly always coincident with the jaw symptom, and like it, is always a sign of some other form of arthritis.

Meaning of the Syndrome.

The syndrome has been spoken of as pathognomonic of rheumatoid arthritis. This, however, is only a half-truth. While it certainly is present in nearly every case of rheumatoid arthritis, it is pathognomonic, not of that disease, but of a whole group of infective and toxic diseases of which rheumatoid arthritis is but a member and a type. Garrod[2] maintained the diagnostic value of the jaw-neck syndrome in rheumatoid arthritis, pointing out its absence in gout and acute rheumatism and its "occasional" presence in gonorrhœal rheumatism, and several writers of monographs on rheumatoid arthritis have been equally emphatic, but the text-books on medicine as a rule, although they stress the involvement of the jaws in rheumatoid arthritis and mention that arthritis of the spine is common in this complaint, do not sufficiently emphasise the localised cervical arthritis; nor does any authority so far as I am aware hint at the broader significance of the syndrome as a sign pathognomonic of one great group of infective arthritic diseases.

I would put it as a definite law that in gout and true rheumatism the syndrome is always absent, and conversely, that in the toxic and infective group it is practically always present.

It must be admitted that the above statements may appear somewhat dogmatic and sweeping; there may be, indeed there must be, exceptions to this as to every other hard-and-fast convenient rule, but I think the exceptions are not numerous. Thus, while the syndrome is never present in gout, and I believe never in rheumatism, it is occasionally absent in the toxic group, and more especially it may be incomplete, the jaw symptom being the sign generally lacking. Again, the syndrome may be absent more frequently in some countries and climates than in others, a phenomenon quite explicable, for we know that variations in the strains of micro-organisms occur under such conditions.

Thus the rule was formulated from a careful analysis, extending over a period of 17 years, of a very large number of arthritic cases seen in hospital and private practice while I was in charge of the Government Baths and Sanatorium at Rotorua, New Zealand, and the exceptions to it appeared negligible. Yet, on my return to England, and with much less clinical

[7] Goring: Op. cit., p. 274.

material, I have found the syndrome much more frequently incomplete (amongst cases at Harrogate).

Nearly thirty years ago, at the Bath Mineral Water Hospital, I was taught the diagnostic significance of the temporo-maxillary joint in rheumatoid arthritis, using that much abused term, not as synonymous with, but as absolutely distinctive from, osteo-arthritis. The accompanying neck symptom in this complaint was also noted. Further experience showed the syndrome to be practically invariable in poly-articular gonorrhœal arthritis. Then, as the importance of buccal and other infections became appreciated, the same rule was found to hold good; and later, in a veritable epidemic of post-dysenteric arthritis, consequent on the Gallipoli campaign, the syndrome was again unfailing. In 11 cases of arthritis occurring during or immediately after the acute specific fevers, the jaw and neck were always affected; and finally I found it in two cases which appeared to be caused by, or at any rate exacerbated by, some toxic action of the thyroid.

Two Main Divisions of Polyarthritis.

Not in a single instance could I discover it in a case of rheumatism or gout in which other infection could be excluded. Thus gradually but irresistibly the conclusion was arrived at that polyarthritic cases could be divided into two main groups, the jaw-neck syndrome cases, that were never gouty or rheumatic, but were always due to a definite infection or toxin, and might be classed broadly as the infective or toxic group, and the non-syndrome cases, that were due to gout, rheumatism, or traumatism.

It is true that acute rheumatism is also almost certainly due to an infection, so that it is perhaps hardly logical to call one the infective and the other the non-infective group, and a more precise term is certainly desirable for the gouty and rheumatic group; indeed, were it not for the fear of rendering the confusion of names worse confounded, I would suggest calling one the "rheumatic" group, and the other—the syndrome series—the "rheumatoid" group, for the latter name commits us to no theory. Whatever the nomenclature, however, the division is practically convenient, more especially from the point of view of treatment.

The Term "Rheumatism."

At present we are confronted with the fact that the word rheumatism is used in conjunction with such an adjective as gonorrhœal. It has always been the bane of discussion on the "rheumatic" diseases that there has been no accepted definition of the meaning of the term rheumatism, and further, that in speaking of the different members of the so-called rheumatic group different authorities have used the same term to signify different conditions; I refer especially to the use of the words "rheumatoid arthritis." This had led to a hopeless confusion of issues, and I would enter a plea for a fundamental clearing of our nomenclature, so that we may know exactly what we are talking about. Before venturing to suggest a comprehensive classification, therefore, I propose to submit a definition of the terms employed. The term "rheumatic" is so useful and so universal that we can hardly forgo it, indeed, there is no other adjective to fill its indispensable place; at the same time it is so vague, and used in such varying senses, as to be extremely misleading. This, perhaps, is due to the gradual evolution of our ideas from a humoral pathology, through a chemical and neural phase, to a bacteriological view, and at the back of our minds is there not still a hazy subconscious blending of these various outlooks? While invasion by micro-organisms is generally conceded as a cause of many of the "rheumatic" conditions, there is, as has been already mentioned, evidence that the influence of internal secretions may in some cases possibly prove a factor in the problem; and so the wheel goes round full circle to meet the old humoral point.

If we must use the word "rheumatic," and there seems at present no help for it, and if we are not going to confine it strictly to rheumatic fever, I would define it in its loose generic sense to cover all forms of arthritis that do not tend habitually to suppuration. Thus pneumococcal and syphilitic arthritis, for instance, would be excluded, for the former tends very frequently to suppuration,[3] [4] and the latter, though sometimes classed amongst the rheumatisms, would appear, in untreated cases,[5] very frequently to do the same, and it is only because we so seldom meet with absolutely untreated syphilis that we see the milder forms of arthritis. Probably it will be found that such a division would include nearly all cases of toxic arthritis and a minority of cases of actual joint invasion.

Again, the term might be stretched to cover the symptoms habitually associated with such arthritis, such as fibrositis and certain forms of neuritis and iritis. Further, to include the test of reaction to salicylates or to weather is hopeless, for nearly all pains react to weather and to acetyl-salicylic acid. Used in this loose form "rheumatism" is a useful word, whose place cannot be filled by the substitution of "arthritis," which, in names like gonorrhœal arthritis, does not by any means cover the whole ground. If, as well may be, such a use of the word rheumatism is objected to, a new and universally accepted term must be invented.

Definition of Terms.

The diseases usually considered as belonging to the "rheumatic" group are: gout, acute and chronic; rheumatism, acute and chronic, rheumatoid arthritis, including Still's disease[6]; gonorrhœal arthritis; various forms of infective and toxic arthritis; osteo-arthritis, including spondylitis deformans; and certain forms of neuritis, iritis, and affections of the skin. In addition, there are certain borderland and disputable conditions, such as chorea and erythema nodosum, which, as we are only concerned with the classification of *arthritis* by means of the syndrome, can be dismissed from present consideration.

Group A.

1. *Gout.*—Acute or chronic is an entity of which we hold, or think we hold, a fairly clear conception, and it needs no definition here.

2. *Acute rheumatism* or *rheumatic fever*, whether or no we agree as to its causation by the diplococcus of Poynton and Paine, is equally clearly-cut in our minds. *Chronic rheumatism*, if we admit the unofficial term, means (it is to be supposed) recurrent subacute attacks of arthritis or fibrositis in a person who has had rheumatic fever, or at least has a strong family history of it, and whose symptoms are not due to some other infection. These constitute the non-syndrome group.

Group B.

In this group the usual cause of the arthritis appears to be a toxin, though in some cases there may be an actual invasion of the joints by micro-organisms. The group as a whole is distinguished from Group A by the almost invariable presence of the jaw-neck syndrome. In rare cases the syndrome may be incomplete, especially as regards the jaw symptom.

3. *Gonorrhœal "rheumatism."*—This condition is interesting as, while it is a well-defined and well-recognised entity, it constitutes a prototype of the whole ensuing group. The disease may be a toxic arthritis, or the joints may be directly infected and show the gonococcus in pure culture, or again there may be a secondary infection with other organisms (cf. infra, Influenza).

The clinical picture is too familiar for comment, but I would draw attention to the following points: The jaw-neck syndrome is nearly always present at some stage of the disease; there is frequently, especially in the acute stages, a characteristic careworn facies; and there is sometimes a bony spur from the os calcis into the plantar fascia, which makes a striking X ray picture. Atrophic bone changes in the phalanges, as in rheumatoid arthritis, have been described but must certainly be comparatively rare. There is, however, frequently seen in a skiagram a curious appearance of obliteration of the interphalangal joint-space, suggesting a non-existent ankylosis. This is due presumably to atrophy of the articular cartilages, and, while by no means pathognomonic, is very suggestive of gonorrhœal infection. There is apt to be a good deal of constitutional disturbance, with a tendency to anæmia and debility. The joints are not much benefited by sodium salicylate, though they may be relieved

by aspirin. In view of the not infrequent secondary infections, it is important to remember that the condition may be waked by some other infection 20 years after a wholly forgotten and insignificant gonorrhœa followed by an equally mild and ignored "rheumatism."

4. *Post-dysenteric Arthritis or Rheumatism.*—The clinical picture is identical with that of the gonorrhœal variety except that there never appears to be a spur from the os calcis. This may be due, of course, to the relatively smaller number of patients that one sees. I examined, however, 50 cases for this condition with negative results.

5. *Toxic Arthritis or Rheumatism.*—In this condition the joint trouble is set up by the toxin evolved from an infected focus, and there is no invasion of the joints by micro-organisms. The toxin may act as a direct poison on the joint, or it is possible may act via the central nervous system; indeed, it is strongly held by some authorities that rheumatoid arthritis is a tropho-neurosis of this nature. Further, I would suggest that the toxin may act sometimes through the endocrine glands. (Vide infra, Thyroid.) The site of infection may be localised, as in the tonsil, a tooth, the nose, the ear, the gall-bladder, or the appendix, or there may be auto-intoxication from the bowel. The infecting organisms, and consequently the toxins, may be of varied nature, but the pathological changes in the joints, though they may vary thereby in intensity, do not vary in kind with the infection. The condition is sometimes wholly indistinguishable from rheumatoid arthritis, but as a rule the clinical picture is less complete, the arthritis less typical and severe, and there is less trophic disturbance of the bones and skin. Provided that no secondary nidus of infection has developed, it tends to clear up when the original cause—e.g., oral or nasal sepsis—is removed. In this respect it differs from those infective cases—e.g., some gonorrhœal ones—in which there is actual invasion of the joints by micro-organisms. According to Goldthwait,[7] however, the co-existence of toxic and infected joints may occur in the same individual.

6. *Rheumatoid Arthritis.*—This disease, possibly caused by a specific infection, is sometimes wholly indistinguishable from other members of the infective group. Whether it is a definite entity or whether it is merely a member of the group, a form of toxic arthritis caused by varying infections, is still a matter of dispute. The completeness of the clinical picture leads me personally to consider it a specific disease. Like the rest of the group, of course, it shows the jaw-neck syndrome, but is distinguished generally by the more pronounced symmetry of the articular and periarticular lesions, as evidenced especially in the first interphalangeal joints of the ring and middle fingers; by the more marked trophic changes of the bones, as evidenced in the X ray picture by the rarefaction of the phalanges in the neighbourhood of affected joints; by neurotrophic phenomena, such as sweating palms and bronzed skin; by persistent tachycardia; and by its predilection for women.

7. *Arthritis following the Acute Specific Fevers.*—Clinically these cases are quite indistinguishable from other members of the group. Except in its origin, there is nothing whatever to differentiate a case of post-measles arthritis from a post-dysenteric case, and I have seen during an epidemic of influenza an attack of that disease light up an old gonorrhœal arthritis. In recent years I have seen toxic arthritis consequent on measles, scarlet fever, enteric, mumps, and influenza—11 cases in all, and in each case there was observable the jaw-neck syndrome.

8. *Thyroid Arthritis.*—The name is introduced in all diffidence and with reservations, as it is doubtful whether the thyroid secretion should be regarded as a primary toxic influence directly causing the arthritis, or whether it may not be rather a secondary influence modifying a pre-existing joint infection. That it is the latter in some instances we have abundant evidence, but from time to time one meets cases which seem to suggest the possibility of the former theory. In the vast majority of recorded cases hyperthyroidism has been associated with the arthritis; in a very few cases only, hypothyroidism. Some connexion between thyroid activity and rheumatism has long been noted,[8] while Spender, I believe, first drew attention to an affinity between Graves's disease and rheumatoid arthritis.[9] Recently I have seen, and described elsewhere,[10] two cases exhibiting the jaw-neck syndrome, and clinically resembling ordinary toxic arthritis, which appeared to be caused by, or at any rate to be modified by, hyperthyroidism, and which cleared up under treatment direct to the thyroid. That they should resemble the toxic cases in exhibiting the syndrome is especially interesting in view of the possible toxic origin in Graves's disease of the thyroid condition itself. One extremely serious case in a middle-aged woman with "goitre and nerves," marked tachycardia but no exophthalmos, was treated by baths and medicines for three years with but slight benefit. The severe multiple arthritis cleared up rapidly with the application of oleate of iodine to the joints and ice poultices to the thyroid. The other case was that of a young girl of 18 with tachycardia and a slight soft goitre, and a condition of joints suggesting mild rheumatoid arthritis. Every conceivable treatment was tried without avail, until, on consideration of the occasional beneficial effect of suprarenal extract in exophthalmic goitre, despite the usually accepted view of the action of the adrenal secretion on the thyroid, she was finally given adrenalin by the mucous membrane of the lip, when the joints began immediately to improve, and the pulse-rate fell to normal.

Group C.

9. *Traumatic Arthritis.*—In the acute stage this is, of course, a surgical condition; in its final stage, unless complete recovery takes place, it is generally an osteo-arthritis. One variety of traumatic arthritis is occupational arthritis—in other words, arthritis due to repeated small injuries in one habitual direction, and is apt to be labelled chronic rheumatism. Closely allied is the secondary arthritis consequent on the abnormal stress of a distant deformity—e.g., the arthritis of a knee due to a flat-foot. It would seem rather absurd to call such cases rheumatic, and indeed they shade off inevitably and imperceptibly into Group D.

Group D.

10. *Osteo-arthritis.*—A condition wholly dissimilar from the rheumatoid arthritis defined in para. 6, and I would submit that in so far as the bony changes are concerned, it is not really a disease entity at all, but rather an end-process and final stage of many diseases, an effort of the system (not always too successful an effort) to limit and repair the ravages of disease or injury. It is characterised by osteophytic out-growth and by deposit of compact bony tissue, and would seem in some respects to afford a somewhat close analogy of function to callus. Just as callus acts as a splint to bone, so we may conceive osteophytic outgrowth as tending to limit the movement of damaged joints, thereby saving wear and tear of enfeebled tissues and giving essential rest in inflammation. Again, the deposit of compact resistant bony tissue would tend to limit the spread of infection. It occurs only in connexion with injured tissues[11] and under no circumstances will you find it arising de novo on an unimpaired surface. The face of the bone, or the articular cartilage covering it, may have been injured by any of the above forms of arthritis, or it may have suffered such gross injury as a fracture. In occupational arthritis the location and form of the resultant osteo-arthritis may at times be foretold with great accuracy by considering the nature of a man's employment; and conversely, the nature of a man's employment can sometimes readily be determined by the examination of the osteo-arthritic scars on his skeleton.[12]

Whether osteo-arthritis be monarticular or multiple, and whether the jaw-neck syndrome be exhibited, will depend on the number and nature of the antecedent lesions. Thus, in traumatic and occupational arthritis one joint, or a limited and definite group of joints, will be affected, while in osteo-arthritis secondary to gout or rheumatism, the lesions are likely to be multiple and the resultant osteo-arthritic deformity will be moulded by the antecedent disease. It was pointed out by Lane[13] that the amount of bone formation, represented by eburnation and bossing, bears a direct relation to the vitality of the osseous system. Thus in mollities ossium and Charcot's disease the arthritis is accompanied by little or no reparative changes. Hence, it may be remarked that, whereas in old gouty joints there is abundant bossing, in rheumatoid joints it is almost absent. It will be noted, too, that osteo-arthritis of the hip-joint is an exceedingly common result of the frequent small bruisings of the joint by the wear and tear of life, while rheumatoid arthritis of this joint is so rare that many observers have never seen a case.

Bearing of the Syndrome on Treatment.

I feel that some apology is due for the fact that the question of therapeutics has been kept somewhat in the background. In extenuation I would advance that, accurate diagnosis being a necessary preliminary to treatment, I have endeavoured, by suggesting a classification, at any rate to clear the ground for subsequent therapeutic measures. This provisional classification—and in the present state of our knowledge all classification must be provisional—is suggested, not for the sake of an appearance of logical completeness, nor from an academic splitting of hairs, but with a view to its practical utility in treatment.

The essence of treatment is first, if possible, to remove the cause, and then, if necessary, to mitigate its effects, to relieve the symptoms. By applying

the syndrome test we can at once class our patient under group A or B, a classification that helps us to find the cause. In class A, the diagnosis lies between true gout and true rheumatism, and is, therefore, as a rule, comparatively easy, and the treatment is more or less specific. In class B the diagnosis will lie, in nine cases out of ten, between gonorrhœal, rheumatoid, and toxic arthritis; if it is the latter, we may perhaps be able to remove the cause—be it a tooth, an appendix, or an infected gall-bladder—without wasting time in attempting to relieve symptoms. But gonorrhœa as the primary cause is exceedingly common. To this infection I believed I was able to trace 10 per cent. of all my "rheumatic" cases admitted to the Mineral Water Hospital at Rotorua.

The diagnosis of rheumatoid disease is unfortunately generally easier than the treatment, but it is a fairly safe rule that all affections coming under class B require a *tonic* line of treatment, or in other words, that the resistance of the patient to micro-organisms and toxins must be increased. The whole group would appear to offer a peculiarly appropriate field for the use of vaccines, success in the use of which will depend so largely on accuracy in diagnosis.

In classes C and D we can sometimes remove the cause, and sometimes mitigate the symptoms, but, as a general rule, once osteo-arthritis had developed, even removal of the cause will be but a palliative, for it is removed too late, and the mischief already done is permanent. In this condition we may lessen the disability and increase the range of movement by mechanical means, and we may relieve pain, but very often our chief efforts should be concentrated on muscle rather than on bone, on the recuperation of important and essential muscles showing trophic wasting as a consequence of the arthritis.

Suggested Classification of the "Rheumatic" Group of Arthritic Diseases.

A.—Jaw-neck syndrome absent.	1. Gout.	Acute. Chronic.	Ending all in D. 10. Osteo-arthritis.
	2. Rheumatism.	Acute. Chronic.	
B.—Jaw-neck syndrome present. The toxic and infective group.	3. Gonorrhœal.	Arthritis or rheumatism.	
	4. Dysenteric.		
	5. Toxic.		
	6. Rheumatoid.		
	7. Arthritis following acute specific fevers—e.g., Measles, Scarlet fever, Enteric, Mumps, Influenza.		
	8. Thyroid arthritis or rheumatism.		
C.—Not rheumatic.	9. Traumatic arthritis.		

References.—1. Nathan: Amer. Jour. of Medical Science, November, 1916. 2. Garrod: Trans. Med. Soc. Lond., 1906, vol. xxxix.; vide also Llewellyn Jones's Arthritis Deformans, and Bannatyne, G. A. 3. Cave, E. J.: Pneumococcic Arthritis, THE LANCET, 1901, i., 82. 4. Lansdown, R. G. P.: Pneumococcal Arthritis, Bristol M.-C. Jour., 1911. 5. Lacapère and Laurent: La Syphilis Articulaire, Paris Médical, September, 1919. 6. Still, G. F., noted the jaw symptom in only three out of 12 cases, the neck symptom "usually," Med.-Chir. Trans., lxxx. 7. Goldthwait: Boston Med. and Surg. Jour. 8. Amongst more recent notes cf. Poynton, F. J., Brit. Med. Jour., 1919, i., 371. 9. Llewellyn Jones's Arthritis Deformans, and Bannatyne, G. A. (full discussion). 10. Herbert, A. S.: Hot Springs of New Zealand. 11. A recent paper by T. S. P. Strangeways (Brit. Med. Jour., 1920, i., 661), opens up interesting suggestions in this connexion: for if the nutrition of cartilage is affected through the synovial fluid, any injury sufficient to cause a synovitis will affect the nutrition of articular cartilage, and may therefore be the forerunner of osteo-arthritis. 12. Cf. Lane, Sir W. Arbuthnot: Trans. Path. Soc., 1884. 13. Ibid.

BRISTOL MATERNITY HOSPITAL.—On Nov. 11th a hospital of 18 beds for the reception of maternity cases was formally opened by Dr. Janet Campbell. The premises, which have been used for this purpose since February, were purchased from the committee of the Homœopathic Hospital, which has removed its work to larger premises in another part of Bristol. The patients' fees cover about half the annual expense, the remainder being found by voluntary contribution and Government subsidy. In her speech Dr. Campbell said that the Ministry of Health was in favour of the establishment of a number of small maternity homes rather than of one large hospital.

A METHOD FOR DIMINISHING MORTALITY IN EMPYEMA IN INFANCY AND CHILDHOOD.

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EMPYEMA is recognised as a serious and comparatively frequent event in childhood, and on this account we believe that the results of this investigation into its occurrence in infancy—that is, in the first two years of life—may be of general interest. As will be apparent, the mortality at this early age is high, and we venture to hope that the method employed by us, of which a detailed description, with illustrations, is given below, may be as helpful to others as it has been to us in diminishing that mortality. This method is not new in principle, as the literature clearly shows. In fact, the surgical principle is in itself as clear as daylight, and is maintained when the septic fluid is safely and completely withdrawn from the chest without recurrence. As a step forward in this direction the method has proved of practical service to us in dealing with children of all ages.

Present Position of the Subject.

Before we enter upon the analysis of the cases in infants, which we have collected, a short review of the present position of the subject of the treatment of empyema will assist us in presenting the particular points we desire to emphasise. Empyema is recognised as one of the most treacherous and puzzling conditions in pulmonary disease. Some cases are simple and straightforward, but others are almost beyond diagnosis, even with radiological assistance, and empyema must be classified with typhoid fever and with tuberculous meningitis as one of those conditions which may humble the most confident diagnostician. The difficulties, as this analysis shows, are many and diverse, and depend in part on the nature, but still more upon the virulence, of the infection. They also depend upon the age and strength of the child, the regional anatomy of the abscess, and the duration of its existence. Post-mortem studies explain how it is that some empyemata are easy to deal with, some difficult, and some almost impossible. So much is common knowledge, but the question is whether in infants, and still more in older children, we can get rid of the abscess by any method safer and no less satisfactory than the usual incision, resection of a piece of rib, and drainage. Hard things have been said of drainage-tubes in treatment, but a physician will tell a surgeon that if there is one thing likely to cause suffering and harm to a child it is the premature removal of a drainage-tube; and this fact has bearing on the whole surgical aspect of the subject. The slipping of these tubes into the pleura, though unfortunately not an impossible occurrence, does not enter into the present problem; for our purpose it may be classed under "regrettable incidents." Let us suppose, however, that the pleura is opened without resection, drained, cleansed, and closed at once. If the case is a favourable one, the result is excellent, but if some pus is left behind, or the infection is still active, more pus is formed and the position becomes difficult. Children cannot be operated upon with impunity, and it is hard to decide when and where to explore again, and adhesions, too, may lead to trouble. Except that the wound is not open, the position is then closely akin to premature removal of the drainage-tube. It is not to be supposed that use of the drainage-tube is ideal or cannot be improved upon, but our analysis does not support any reason for a fierce

attack upon it, for infants of 6, 7, 8, 10, and 11 months have recovered under such treatment, and many children owe their lives to its careful use.

Resection of ribs is intimately bound up with the use of drainage-tubes, for it is well known that unless resection is done in the young the ribs will pinch the tube and bring about a condition analogous to premature removal of one tube, or too early closure of the wound.

It is clear from our analysis that, with all its disadvantages, resection and drainage is a valuable operation, and that any method chosen will, in some cases, meet with considerable and possibly unexpected difficulties. It is also apparent that a method which will diminish shock and suffering, and yet be effectual, will be a means of saving life.

Analysis of 71 Cases of Empyema in Infancy.

1. *Age and sex.*—Twenty-one cases were of 1 year and under, the youngest being 4 months of age, and 50 were between 1 and 2 years. Forty-five were males and 26 females.

2. *Mortality.*—The death-rate in the first 12 months was very high. Sixteen of the 21 succumbed, and of the 50 over a year old 23 died. In percentages the death-rate in the first 12 months was 76, and between the first and second years, 46. The total number of deaths was 39, or 55 per cent. These figures closely approximate those given by Spence.[1]

3. *Clinical histories.*—It is remarkable, when the histories of these cases are examined, how long a time may elapse between the first signs of definite illness and the discovery of pus in the chest, and how frequently this happens. Allowing for errors and oversights, in many cases the early symptoms are very indefinite, and we are left in doubt as to when the actual development of the empyema occurred. For this reason we have empirically classified these cases into three groups: (1) Acute, with symptoms of under a week's duration, (2) subacute, with a history of from one to three weeks' duration, (3) chronic, with a history of from three weeks' to eight months' duration. There were 13 acute cases (10 deaths); 13 subacute cases (7 deaths); and 45 chronic cases (22 deaths). From this analysis the importance of the virulence of the infection is apparent.

4. *Nature of infection.*—In 31 of the 39 fatal cases the nature of infection was as follows: 21 pneumococcal, 4 staphylococcal, 3 streptococcal, 3 tuberculous. In the remainder the causal agent was not stated. Taking all the cases: 43 were pneumococcal (21 deaths), 7 staphylococcal (4 deaths), 3 streptococcal (3 deaths), 3 tuberculous (3 deaths), and 1 sterile (recovery). In 14 cases the cause was not stated. From these figures it is apparent that the pneumococcal infection easily preponderates in the empyemata of infancy, and that the death-rate from this cause is close upon 50 per cent. In spite of this fact we would here repeat that the histories of many of these cases as gathered from the case-books, often gave indeterminate symptoms. The figures in which we have tried to express this point must not, however, be looked upon as of more than relative value. In 26 cases there was a clear history of pneumonia, in 7 of bronchopneumonia, in 7 of bronchitis; 6 were associated with measles and bronchitis; 1 with chicken-pox, and 3 with whooping-cough. In 20 cases, although respiratory symptoms and signs appeared, no definite name had been given to the illnesses before admission.

5. *Prominent symptoms in the histories.*—The prominent symptoms recorded in the pre-hospital histories were as follows: Cough in 38 cases, vomiting in 24, dyspnœa in 23, wasting in 23, pain in 8, cyanosis in 7, "fits" in 4. Of these the reiteration of vomiting, breathing trouble, and wasting, when coupled with cough, stands out as an indication in infancy for careful consideration of the possibility of the presence of an empyema. We believe that any group of symptoms in these difficult cases, which would help to remind us of empyema, would be of assistance, and we are led to this belief from the record of the prominent signs which were found in this series on admission to hospital.

6. *Signs on admission to hospital.*—In no less than 66 cases definite impairment or complete dullness was discovered in some part of the chest, and almost invariably at one or both bases. In 46 the breath sounds over these regions were absent or diminished. In 18 there was tubular breathing, and in 23 the heart was displaced. Crepitations were noted in a few cases. The well-known fact may here be emphasised that in infancy and childhood tubular breathing is frequently found over the site of an empyema—a fact apt to mislead those unacquainted with the occurrence. It is worthy of note that displacement of the heart is only recorded in 23 of the 71 cases, although it must be allowed that slight displacements in infancy are by no means easy to recognise decisively.

7. *Causes of death.*—The causative factors of death in the 39 fatal cases of our series constitute a question of great importance for prognosis and treatment. In 8 cases there was no post-mortem examination, and these must be set aside, leaving 31, which we divide into three groups.

Group 1.—Twelve cases, in which the empyema was either not detected, or, if it was detected, the child was moribund on admission. In 2 of these cases tuberculous meningitis was found, and in 3 suppurative pericarditis.

Group 2.—Eight cases, all of which were operated upon with resection of a piece of rib, but the necropsies showed the following complications: In 3 cases suppurative meningitis, in 3 suppurative pericarditis, in 1 lateral sinus thrombosis, and in 1 gangrene of the lung. In all these cases the lungs themselves contained either areas of pneumonic consolidation or some collapse. Both suppurative meningitis and pericarditis occurred not only in cases with long histories, but also in acute cases.

Group 3.—Eleven cases in children who either died rapidly from shock and collapse, or rallied for a day or two, and then—the wounds having become unhealthy and the temperature having again risen and persisted—they sank gradually, apparently from a lack of vital power to resist the infectious process. In this group we hoped to gain some success by the method described below, which minimises shock and eliminates the open wound.

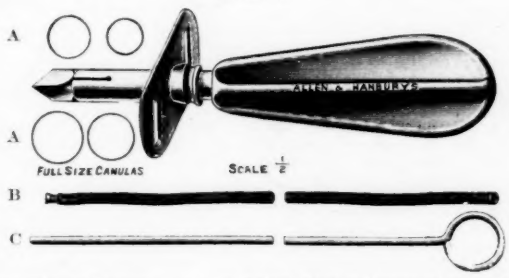
In a brief review of this analysis it becomes apparent that failure to detect an empyema is a factor in an adverse prognosis, but we do not presume to criticise this failure, realising well enough how deceptive the symptoms may be and how difficult also the physical signs. We would dwell upon cough, dyspnœa, vomiting and wasting as a combination of symptoms suggestive of an empyema. A certain proportion of these cases demonstrate that a small empyema is only one incident in a profound toxæmia, and is of no practical importance in the face of a virulent infection, damaging not only the lungs and pleuræ, but also the pericardium and meninges. It is, however, the cases that sink and die after operation that require special consideration, and have suggested the need of some method of treatment other than resection and drainage.

The Method of Continued Aspiration.

(A) *Apparatus.*—The apparatus and technique used by us have been devised with the special object of completely emptying the pleural cavity, and maintaining continuous drainage by aspiration without at any time exposing the cavity to the outside air and secondary infection. The apparatus consists of:—

(1) A straight round silver cannula, $\frac{5}{8}$ inch in length, provided with a shield through which tapes are threaded whereby it is kept in position on the chest wall. (Fig. 1A.)

FIG. 1.



Cannula and trocar. A A = Actual sizes of lumen of cannulas. B = Rubber tube. C = Introducer. The trocar and cannulas are made in four sizes by Messrs. Allen and Hanburys, Ltd.

(2) A trocar, with a short point, used for insertion of the cannula.

(3) A rubber tube (B) 10 inches long, having a slightly larger lumen than the cannula; one end of the tube is completely closed by tying it firmly with a silk ligature, and immediately below this a hole is cut in the tube, $\frac{1}{2}$ inch long, and involving half the diameter.

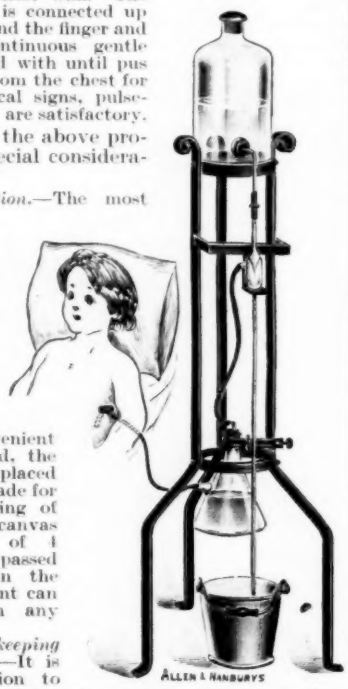
(4) An introducer (C) for the rubber tube, which consists of a metal rod that will easily pass into its lumen.

(5) A White's suction-pump, as used for suprapubic drainage.

(B) *Method of procedure.*—After a preliminary exploratory puncture the site of operation, which will be referred to later, is anæsthetised with novocaine.

Tapes having been threaded through the shield of the cannula, the latter is introduced into the pleural cavity by means of the trocar, and the tapes are tied securely round the chest wall. The rubber tube is held by the open end, and the metal rod is passed down and pressed against the closed end until the tube is stretched sufficiently to allow it to pass easily through the cannula. The trocar is now withdrawn and a finger, wrapped in gauze, instantly placed over the opening. The tube is taken, stretched on the introducer, and carefully slipped under the finger and through the cannula, being introduced as far as may be thought necessary according to the size of the patient and extent of the empyema (the actual distance, in any particular case, can be ascertained by having marks on the tube at intervals of 1 inch). (Fig. 2.) The introducer is gradually withdrawn and the tube tightly pinched between finger and thumb close to the chest wall. The free end of the tube is connected up with White's pump, and the finger and thumb removed. Continuous gentle aspiration is persisted with until pus has ceased to come from the chest for 48 hours, and physical signs, pulse-rate, and temperature are satisfactory.

FIG. 2.



Showing the cannula in position and the tube connected up with White's pump.

Certain points in the above procedure demand special consideration:—

1. *Site of operation.*—The most comfortable place for the patient, and at the same time the easiest for after-treatment, is a rib space as low as possible just anterior to the mid-axillary line. In this position the patient can lie on the affected side without interfering with the tube. If it is necessary or convenient to drain from behind, the patient can easily be placed against a bed-rest, made for the purpose, consisting of a wooden frame with canvas strips at intervals of 4 inches. The tube is passed through a space in the frame, and the patient can then be placed in any required position.

2. *Fixing and keeping cannula in position.*—It is advisable, in addition to the tapes, to place straps of adhesive plaster over and at right angles to the shield on either side of the cannula. A gauze dressing and a firm figure-of-8 bandage are then applied.

3. *Escape of pus.*—In passing the rubber tube through the cannula, care must be taken to avoid any escape of pus whereby the puncture wound may become infected.

(C) *Advantages of the method.*—1. The period of illness is shortened. In cases treated by rib resection the average time before the wound is healed is six weeks; with the method described above the average time between insertion of the cannula and complete healing has been 15 days—a figure which would be much lower but for Case 3 (quoted below) which required four weeks. The explanation of this advantage is that: 2. There is no secondary infection of the pleural cavity. The rubber tube has a larger lumen than the cannula, so that, when released from the introducer, it expands and fits the cannula tightly, preventing any leakage of pus, soiling of the wound, and re-infection backwards to the pleural cavity. Another important point in the shortening of the illness is that osteomyelitis of the rib, so common after resection, does not occur. 3. No anæsthetic is required. The whole procedure can be carried out in a few minutes, causing very little disturbance and without removing the patient from bed; thus eliminating all the risks attendant upon moving a seriously ill child to the theatre and giving an anæsthetic. 4. Surgical trauma and its consequent shock are reduced to a minimum. The pain and discomfort of inserting the trocar are no more serious than exploration with a needle. 5. No daily dressing is required. Those who have seen what mental and physical suffering so many children endure for weeks after resection of rib will readily appreciate what a relief this method will be to all concerned. 6. The patient can assume any required position without fear that drainage will be interfered with. 7. The drainage is continuous and complete. Pus cannot collect in the bottom of the cavity and depend upon the position of the patient or upon expiratory efforts for its expulsion. 8. Expansion of the lung is assisted. The suction produces a negative pressure of 8 mm. Hg; this being more than the normal negative pressure of the pleural cavity, the lung tends to expand and assume its normal function more readily. 9. The removal of the pus is gradual. The continuous suction causes a steady slow outflow of pus, and it is some hours before the cavity is emptied; a displaced heart is thereby allowed to reassume its normal position quietly and gradually without the suddenness which is bound to occur if incision and drainage are employed. This fact is important when one recalls cases of syncope due to sudden withdrawal of pus and the replacement of a displaced heart.

(D) *Practical difficulties.*—1. Occasional blockage of the tube by masses of fibrinous lymph. It is remarkable how much solid matter will be sucked through, but should blockage occur, it can be remedied by increasing the suction by stretching the tube out between the fingers and expressing its contents into the flask by an action which may be compared with "milking." If this fails the plug of lymph can be washed away by injecting a few cubic centimetres of sterile saline into the tube. This difficulty has, in our opinion, been somewhat exaggerated by previous writers, for in none of our series of ten cases has there been failure to drain the chest by this method. 2. It is obvious that, as has been pointed out in the earlier part of this paper, there will be chronic or unusual cases in which this method will not be suitable.

(E) *Illustrative cases.*—Cases in which we have used this method, all of which recovered, varied in age between 15 months and 11 years. Among these were three under 2 years of age, which, therefore, come within the scope of this paper. The first and second of these show how simple and successful this method may be, while in the third we believe life would have been lost had incision and drainage, with or without resection, been undertaken.

CASE 1.—Fred G., aged 18 months. Admitted to the Children's Hospital, Great Ormond-street, on Jan. 12th, 1921, with an empyema at the right base following broncho-pneumonia. He was a pale wasted infant in very bad general condition. Exploratory puncture confirmed the presence of pneumococcal pus. The chest was drained by the method described for five days, and the child made an ininterrupted recovery.

CASE 2.—Louie B., aged 18 months. Admitted to hospital, May 7th, 1921, with broncho-pneumonia; seven days later empyema developed at the left base. The chest was drained for eight days by aspiration, and two weeks later the child was discharged, quite well.

CASE 3.—Lilian B. aged 18 months. Admitted to hospital, June 7th, 1921, with a large empyema on the left side. The heart was displaced to ½ inch outside the right nipple line. Patient was very ill, with a pulse-rate of over 160, respirations 80 per minute, temperature 100° F., and much cyanosis and dyspnœa. Drainage was commenced and proceeded satisfactorily. Ten days later the lung was expanding well, but there was a copious amount of pus still being aspirated. Unfortunately the tube was twice dislodged accidentally, and there was infection of the soft tissues round the cannula. Four weeks after admission, however, complete healing had taken place. Any serious operative treatment on admission would have been attended with very grave risk. The child made a good recovery, with the affected lung working well.

This last case illustrates a difficulty which may arise from not fixing the cannula securely; with increasing experience this has not occurred in any other case of our series. In this connexion the nurses should be warned of the importance of seeing that the tube leading from the chest to the pump is quite free, so that, should the child turn over in bed, there will be no pull on the tube, which may dislodge the cannula.

(F) *Some previous investigations into treatment of empyema by aspiration.*—We repeat that the principle of this method is by no means new, for as long ago as 1873 Playfair advised aspiration, and his technique was used and described by Dieulafoy.[2] In 1891 Bulau [3] devised a form of syphonage through a small rubber catheter introduced by means of a trocar, and Perthes [4] used this method with the addition of a water pump to provide continuous suction. Many modifications have been devised,[5] some of which are simple and useful up to a point, others too complicated for general use. They all have the disadvantage that they do not prevent secondary infection of the pleural cavity, and this we know, as has been specially pointed out by Holt [6] in a series of 145 cases, is generally the cause of death by exhaustion from prolonged suppuration. When we consider the high mortality of empyemata in infancy and their frequency at all ages in childhood, we believe that the method of treatment described here will be a real assistance in diminishing the dangers.

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SPORADIC OUTBREAKS OF PLAGUE IN THE UNION OF SOUTH AFRICA.[1]

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SINCE January of 1916 occasional cases or small groups of cases of plague have been discovered at irregular intervals in the Orange Free State and neighbouring districts, occurring under circumstances which did not, until recently, disclose the method of the spread of infection. The number of cases and the circumstances under which the outbreaks occurred have from time to time been officially declared. In previous years well-defined epidemics of the disease had occurred at the ports and larger towns in connexion with well proved epizoötics in the "domestic" rat population, and following the courses of transit of grain and other foodstuffs in the usual way. These epidemics were satisfactorily dealt with by campaigns against the "domestic" rodents and the other usually effective methods.

The occurrences since 1916 have differed in character from these well-defined epidemics in the following particulars:—

(1) The outbreaks were confined to persons or small groups of persons living in rural areas less densely populated than the bulk of South Africa, and remote from larger towns and villages.

(2) Investigation and the closest inquiries failed to elicit the existence of "domestic" rodents at or anywhere near the scene of the outbreaks. The nature and structure of the farm-houses and native huts in which many of the cases lived was such as not to favour the existence of domestic rodents.

(3) The time intervals between adjacent groups of cases was irregular, being in some instances a few weeks, and in other instances as much as many months. The distances between the scene of such outbreaks as would at first sight appear to have a common source of infection were in some instances as great as 50 miles, the intervening population remaining unaffected and the closest investigation failing to elicit any connexion, personal or through verminous fomites, between the groups of cases. Many of the cases occurred in persons living on isolated farms of several thousand acres, and having limited intercourse with their neighbours.

The Central Health Department was faced with the problem of discovering either the source of infection common to these outbreaks, or the means of transference of infection from one case or group of cases to the next, over varying intervals of time and space in the unusual circumstances stated. The theory tentatively held, that latent infection could remain in ambulatory human cases to reappear and be passed on in virulent form after a considerable interval, had under the circumstances to be revised, and as the series of small detached outbreaks continued to occur up to 1921, Dr. Mitchell, the Secretary for Public Health, decided to have close investigation made into the species, habits, and morbidity (if any) of the wild rodents of the affected area, and for that purpose enlisted the aid of experts trained in the capture and classification of African wild animals. The following results were arrived at in the early months of 1921:—

The area of country involved with a radius of about 150 miles may be roughly described as flat or gently undulating plains intersected by watercourses which only contain flowing water for a few months of the year, but in the valleys of which occasional pools may remain longer. These valleys are fringed with low scrub and vegetation, varying from a few to several hundred yards in width. The soil generally is a light sandy loam. The indigenous vegetation is grass, patches of low scrub, wild melons and cucumbers and the like, which usually grow in such latitudes in plains with scanty rainfall. The area is divided into farms of from 1000 to 5000 acres, and is mostly concerned with the raising of sheep and the production of maize and other cereals. The human population, both white and native, is very sparse and widely separated. The conditions generally favour the existence of the smaller wild animals, especially rodents, which find harbourage by burrowing under the roots of grass and the low scrub.

The animals captured were as set out in the following list:—

Common name.	Name as determined by an official of the Transvaal Government Museum.
Gerbille or gerbil	Tatera lobengulæ.
Large-eared mouse	Malacothrix typicus.
Fat mouse	Steatomys pentonyx.
White-tailed mouse	Mystromys albicaudatus.
Tree mouse	Dendromys melanotis.
Dwarf mouse	Leggada deserti.
Striped field mouse	Rhabdomys pumilio.
Multimammate mouse	Rattus coucha.
Namaqua rat	Rattus namaquensis.
Golden rat	Rattus chrysophilus.
Ground squirrel or meer kat	Geosciurus capensis.
Spring hare	Pedetes caffer.
Yellow hare	Lepus ochropus.
Kolhaas	Lepus zuluensis.
Red hare	Pronolagus.
Suricate	Suricatta.
Stender mongoose	Galerella caaui.
Yellow mongoose	Cynictis penicillata.
Muishond	Ictonyx striatus.

Considerable difficulties were encountered in their capture and in the investigation of their habits, owing to the fact that many of them are strictly night animals and burrowers, necessitating the careful tracking of small spoor in the early mornings to and from water-holes and feeding-places. The burrows are often of considerable depth and extent, branching in several directions, while the ordinary heap of earth which one looks for as indicating a burrow inlet may be absent, the earth removed in burrowing being used to block up the passage behind the burrower. Entrances and outlets may be numerous and carefully concealed under overhanging bunches of grass or bush. It was, moreover, found to be a

[1] A paper presented at the Royal Society of Medicine, Section of Epidemiology and State Medicine, on Oct. 28th, 1921.

common habit of some of these animals to occupy the burrows of animals of different species and it was no uncommon matter to find the carnivorous mongoose and some of the smaller non-carnivorous rodents inhabiting the same series of burrows without detriment to the latter; it should be remarked, however, that in such instances the carnivore would be a day feeder while the non-carnivores would be night feeders.

The procedure devised in attempting to discover the presence or absence of sickness or mortality due to plague infection was to commence tracking and digging out operations close to the localities where human plague cases had resided or (what was subsequently found to be equally important) in the immediate vicinity of where the human cases had been engaged in agricultural occupations, such as ploughing, herding sheep, or camping for meal times. It was found important also to rapidly and widely extend the area of operations, because in the early investigations the burrows in the immediate vicinity of the residence or work place of the human cases had been found to be deserted by animals and fleas, or at most to contain only a few shrivelled remains of their former occupants from which it was impossible to determine the presence or absence of plague infection. As a result of very zealous and painstaking work, conducted on these lines, extensive sickness and mortality due to plague among some of the smaller species of rodents were at last discovered.

The procedure for verifying the nature of the infection and the safeguarding of the experts and their native labourers from the danger of flea-carried infection while engaged in laboriously exploring the ramifying burrows and the rodents' nests, presented some initial difficulties. Owing to transport difficulties it was considered impracticable to make use of a field laboratory. Arrangements were eventually made whereby a supply of ice and containers was kept constantly at hand for the transport without putrefaction of animals recently dead to a central laboratory for diagnosis, and as regards the danger from fleas, which were found in abundance, the use of insecticides, both personally and otherwise, was practised before the bodies or nests of rodents were handled.

The animals so far proved to be plague infected and to show a very heavy mortality over a wide area are: (*a*) Gerbille or *Tatera lobengulæ*, a rodent slightly larger and somewhat similar to the domestic brown rat. (*b*) Multimammate mouse or *Rattus coucha*, a rodent somewhat similar in size and appearance to one of the ordinary domestic mice. These two are thought to be perhaps the commonest of the animals contained in the above list, in the area of country under consideration, and they undoubtedly exist there in very large numbers. Burrows containing one or the other, and more often both species, extending in what may roughly be described as chain formation with occasional gaps, have been traced almost throughout the whole area. Both are animals which only venture out at night, and this fact and their habit of closing up the entrance passages of their burrows, may account for the failure of the earlier investigations and inquiries as to the presence of rodents in or near residences affected by plague. Both feed commonly on the young roots of vegetation, wild melons and the like, and both occasionally, and when pressed for food, eat grain. Neither lives in farm-houses or natives' huts, but the multimammate mouse is inclined to live in closer proximity to human habitations than the gerbille, and its burrows have occasionally been located by an expert in the backyards of farm-houses and close to the walls of native huts. Provisionally, then, this species may be accepted as being the common conveyer of infection to man in the area in question, but an instance has occurred where the evidence definitely points to human infection acquired from a gerbille burrow remote from human habitation. The person infected had been accustomed to sit daily for his midday meal on a spot honeycombed with gerbille burrows—from which subsequently definite evidence of gerbille infection was obtained. None of the other animals mentioned in the above list have been found so far to be plague infected, but the numbers of these captured and examined have been small and no experiments have been so far made to ascertain their susceptibility to plague.

Several means have been attempted to destroy these rodents, but the methods ordinarily applicable to "domestic" rodents are not generally practicable, owing to the vast areas involved, and to their habits of feeding and burrowing. Poisoning on a large scale appears to be inapplicable, having in view the nature and easy accessibility of their principal food. The use of sulphurous and arsenical vapours, either with or without special apparatus, met with scant success owing to the closing of burrow passages and the branching of the burrows. Where the entrances of burrows have been discovered and cleared some success was obtained by the use of carbon bisulphide in each opening, and the subsequent closing by turf. On subsequent excavation all occupants have been found dead, and the fleas, both on the rodents and in their nests, have been found in a more or less inactive state. The fatality to fleas is not so marked as the fatality to their hosts, and a dose of the vapour which destroys all rodents leaves a fair proportion of their fleas in a condition from which they recover. Trapping or systematic digging out in such an area is too vast a work to be seriously considered.

There remains for consideration the possibility of providing or increasing their natural enemies, or of discovering and spreading a disease among them which is not fatal to human beings. A careful collection of fleas and other ectoparasites found on each animal captured or found dead and in the underground nests was made. The results of their classification will be declared in due course. No experiments have hitherto been made to discover which of the varieties found are capable of transmitting the bacillus, but it may provisionally be assumed that the carriage of infection from rodent to rodent and from rodent to man has been effected in this area by one or other of the varieties found.

From the circumstances here described, and from the observations of experts on the spot, more especially from the discovery of large areas of rodent burrows entirely depopulated and containing only a few shrivelled remains, it appears probable that plague infection almost annihilates gerbilles and multimammate mice in any particular series of burrows infected, and that the epizoötic extends slowly across country in an irregular manner through chance visits of animals to burrows in the vicinity of their own dwellings, while a sufficient number may escape death to bring about a repopulation when the period necessary for the death of the ectoparasites in infected burrows has elapsed. Human infection from fleas which have deserted the dead rodents and their nests has been only an occasional occurrence, and has been commonest in those engaged in outdoor pursuits. As the area involved produces cereal foodstuffs and forage, which are sent in to the towns, and as long as wild rodent infection there exists, there must be faced the problems of preventing the transference of infected fleas or rodent remains from the collecting centres and railheads, the preventing of the extension of the town or domestic rat population to the area in question, as well as the general curtailment of the domestic rodent in the towns and ports.

The information obtained in these investigations appears to tally in some respects with the reports of infection of wild rodents by observers in other countries so well collected and set forth in Dr. Bruce Low's last report on the progress and diffusion of this and other diseases throughout the world 1914–17, and may further help to elucidate certain problems as to the existence of latent foci of infection, remaining perhaps almost unnoticed in remote rural areas, from which at intervals, and dependent on the extent and vulnerability of the domestic rat population, a serious epidemic affecting human life and trade may arise, traversing the routes of the transit of grain and other foodstuffs.

A CASE OF DECEREBRATE RIGIDITY IN AN INFANT,

ASSOCIATED WITH DIFFUSE SOFTENING OF THE CEREBRAL CORTEX AND CALCIFICATION OF THE CEREBRAL VESSELS.

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FROM the clinical aspect this case appears to be one of complete decerebrate rigidity of the type to be expected after ablation of the cerebral cortex.

M. J. M., a girl aged 4 months, was admitted to hospital on Oct. 3rd, 1920, under Dr. W. H. Wynn, with a history of three days' illness, during which she had vomited all her food and had had twitching affecting the right side of her face and legs. She was an only child, and had been breast-fed and bottle-fed; as far as can be ascertained she was quite healthy until the onset of this illness. There was nothing to suggest syphilis.

Condition on admission.—The infant was well developed and well nourished. She appeared unconscious, but occasionally rallied and seemed to take slight notice of her surroundings. The anterior fontanelle was distended, the conjunctival reflex was present, and the pupils reacted to light. The attitude of the child, when the bed-clothes were removed, was striking; she lay stretched out stiffly, with a slight degree of head retraction and opisthotonos. The arms were extended at the elbows, and held close to the sides, forearms pronated fully but not excessively, wrists strongly flexed, fingers strongly flexed at metacarpophalangeal joints, and interphalangeal joints extended. The knees were rigidly extended, thighs adducted, feet plantar-flexed, with the toes pointing downwards. The outstanding feature was the general rigidity, so marked that when the leg was raised in an endeavour to elicit Kernig's sign the whole body was raised, pivoting on the head on the pillow. The knee-jerks could not be elicited; the plantar responses were doubtfully extensor. Lumbar puncture was difficult to perform, as it was impossible to flex the spine. The child seemed entirely insensitive to the needle. The cerebro-spinal fluid was clear and under considerable pressure. Repeated examinations revealed no abnormality, with the exception of a doubtful increase of mononuclear cells. Cultures were uniformly sterile. The Wassermann reaction was not performed. Physical signs in the chest and abdomen were normal; the bowels were moved regularly.

Course of case.—The child's condition varied but little during the two remaining months of her life. She hardly ever appeared conscious and rarely cried; occasional twitching of the limbs was reported by the nurses, but it was always transient, and serious convulsions never occurred. The rigidity varied slightly; on some days the child would be slightly relaxed from the poker-like condition of admission, and she could then take feeds with difficulty. One remarkable change in the posture occurred about a week after admission: the feet, previously plantar-flexed, became dorsi-flexed, and at the same time the legs were rotated outwards, so that the feet came to lie heel to heel almost in a straight line across the body. After a few days the original position was resumed. The temperature was irregular; for no apparent reason it rose frequently to 101° or 102° F., and fell again within a few hours. There was no marked respiratory irregularity. The child died on Dec. 6th, 1920, after rather more than two months' illness.

The clinical features throughout the course of the illness appear to bear a close resemblance to the condition of decerebrate rigidity, as described by Kinnier Wilson, in man. The absence of gross respiratory irregularity in this case is explained by the peculiarity of the morbid anatomical findings described below.

Necropsy, performed on Dec. 8th by Prof. J. Shaw Dunn.—The body was that of an emaciated child; the calvarium was thinner than normal, and the medullary centres of the membrane bones of the skull were much congested. The dura mater was tense, and an excess of clear fluid escaped when it was opened. Inside the intact pia-arachnoid the brain presented a peculiar condition, in that large areas of the cerebral cortex had undergone an extreme degree of softening. A large area of this sort occupied the middle of the left temporo-sphenoidal lobe; similar but smaller areas were found in the other lobes of the cerebrum, no part of which presented normal appearances. On making a horizontal-transverse section of the cerebral hemispheres it was found that the softened areas contained much fluid, which ran out freely, so that the cerebral cortex with the pia-arachnoid collapsed, producing a shrivelled appearance of the surface of the cerebrum. This can be seen in Fig. 1, which is reproduced from a photograph of the preserved specimen. No lesions could be detected in the basal nuclei or in any other part of the brain, which had the ordinary appearances of infantile brain tissue. The right lung showed well-marked broncho-pneumonia in the posterior part of all three lobes. No evidence of tuberculosis could be found in the brain or in any other part of the body.

FIG. 1.

Cerebrum, showing the extensive softening of the deeper layers of the cortex and adjacent white matter. The most superficial part of the cortex is seen to be intact, and under this there is a continuous space; this can best be seen in the portion of the brain shown at the right-hand side of the figure. (Two-thirds natural size.)

Histological examination.—Examination of formalin-fixed material showed an almost complete destruction of the deeper layers of the cerebral cortex and adjacent white matter, the superficial cortex being thus severed from its connexions with the deeper parts of the brain. The softened areas had undergone almost complete absorption, and in the deeper part of the cortex and adjacent white matter there was only granular debris. This softening and subsequent absorption have brought the vessels into closer approximation, and so given rise to an appearance of excessive vascularisation. These appearances are well seen in Fig. 2. Many of the meningeal vessels lying in the sulci show a well-marked endarteritis obliterans which narrows, and in some cases obliterates, the lumina. The newly-formed tissue in the intima is loose and reticular in appearance, showing no formation of connective tissue of healthy type. Many of the vessels in which this type of endarteritis is present also show some degree of calcification in their walls; this process of calcification can also be seen in some of the vessels in which no endarteritis is present. In most of the affected vessels the calcification commences in the media, and in no case extends into the intimal thickening. The meninges in the sulci—and, to a less extent, over the gyri—show an ill-defined meningitis in that they exhibit newly-formed connective tissue and a small excess of mononuclear cells. These appearances are seen in Fig. 3. In the brain tissue there are a few foci of calcification which appear to bear no relation to the vessels.

Discussion.

There is one outstanding difference between the clinical picture of the case and the description given by Kinnier Wilson.[1] The present case showed no marked respiratory irregularity, which is described as part of the picture in cases due to transection of the mesencephalon. Kinnier Wilson suggests that, in

the case of lesions in the mesencephalon, the respiratory irregularity is due to involvement of the mesencephalic respiratory tract described by Graham Brown. The purely cortical localisation of the lesions in the present case would explain the absence of this feature. There is no note of glycosuria occurring during the course of the illness, which is surprising in view of the statement that there is continued glycosuria in decerebrate animals (Mellanby[2]).

There is nothing to lead one to believe that the child suffered from any brain disease at birth or, in fact, before the onset of this fatal illness, and it would appear that the anatomical changes represent the effect of an inflammatory lesion of about two months' standing, the gross softening being due to occlusion of vessels. The peculiar distribution of the softening in the deeper layers of the cortex and adjacent white matter may possibly be explained by the arrangement

FIG. 2.

Showing the softening and absorption of the deeper layers of the cortex and adjacent white matter, and also the appearance of increased vascularisation. The swelling of the meninges is well seen. (× 10.)

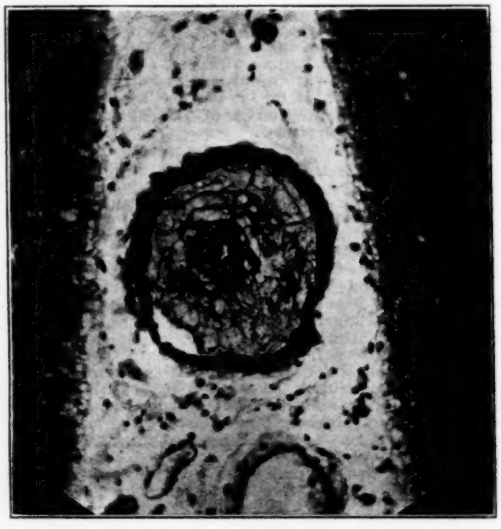
of the cortical vessels, as described by Bignami and Nazari.[3] These authors state that the pia supplies two types of vessels, one short and one long, both of which penetrate the grey matter. The short vessels are purely cortical, whereas the long ones supply a narrow territory in the centrum ovale: anastomoses between these two types of vessels occur in the deeper laminæ of the cortex, and the richest capillary network is in the infra-granular layers. No spirochætes could be found in sections stained by Levaditi's method, and there was no real evidence of syphilis.

We have been unable to discover any identical case in the literature of the last 20 years, and cases with even a slight similarity are rare. Sutherland and Paterson[7] have described two cases of "forebrain aplasia," in which the clinical picture appears to have been that of incomplete decerebrate rigidity. The macroscopic morbid anatomy appears to have been very like that of the present case, but the histological details are very meagre; it is stated that the vessels were "too numerous and too thick as regards their walls," but one cannot be sure whether the authors wish to imply that there was a new formation of vessels or that there was simply closer approximation of the vessels due to collapse of softened areas. No cause is assigned to the undue thickness of the vessel walls.

At the International Pathological Congress in 1911 Dürck[4] showed a case of almost complete calcification of the cerebral hemisphere and states that some of the vessels in the neighbourhood showed calcification of their walls. His case was that of an adult male idiot, and, as far as one can discover from his clinical description, there was no very definite rigidity throughout the course of the patient's life. Marchand,[5] in the discussion which followed the above-mentioned paper, brought forward a case of cerebral calcification associated with the presence of a racemose angioma, and emphasised the fact that calcification of the cerebral vessels is not uncommon in the neighbourhood of a chronic inflammatory focus.

Meier[6] reports a case of total softening of both cerebral hemispheres in an infant, aged 5 months. The clinical account is not complete, but he definitely states that there was opisthotonos and extension of the arms with flexion of all the joints of the hands; the legs were extended and the toes pointed down-

FIG. 3.



Showing the changes in a meningeal vessel. The lumen is almost occluded. The dark line internal to the adventitia corresponds to total calcification of the media. The somewhat excessive cellularity of the meninges can be well seen. (× 100.)

wards. The macroscopic findings at autopsy were very similar to those detailed above. Histologically there appears to have been separation of the cortex from the subcortical tissues by extensive softening. Apart from mention of excessive number, there is no note of the condition of the vessels. Here, apparently, was a case of the same type as that described in the present communication; the child was of approximately the same age, the illness commenced with vomiting and convulsions, and the duration was about two months. Whether the conditions seen in our case can be regarded as an early stage of the condition described by Dürck appears doubtful, but there seems no reason to doubt that had the patient survived, idiocy would have been the effect of lesions so extensive as those described above.

Throughout the examination we have been greatly indebted to Prof. Shaw Dunn for advice on details of histological and photo-micrographical technique, as well as for permission to make use of his notes of the condition found at necropsy. Our thanks are also due to Dr. Wynn for permission to make use of this case.

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(*Continued at foot of next page.*)

NOTES ON THE FORMALIN BLOOD TEST FOR SYPHILIS.

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THE value of this test lies in its simplicity. Blood is drawn in the usual manner as for a Wassermann test. In the following cases the blood was collected in a clean but not sterilised test-tube; the test-tube was stopped with cottonwool, and set in a rack for 24 hours at ordinary room temperature. The room used was not a heated laboratory, but either the consulting-room or the sitting-room. At the end of 24 hours the serum was decanted from the test-tube into another clean but not sterilised test-tube; a drop of ordinary commercial formalin was added, and the tube was plugged with cotton-wool. (This, of course, could be done as soon as the serum had separated; 24 hours was merely a period dictated by convenience. Moreover, it is not absolutely necessary to decant the serum into another tube; the formalin can be added straight away to the supernatant serum.) The serum and formalin were then allowed to remain at ordinary room temperature as before for 24 hours, the period prescribed by Gaté and Pappacostas,[1] who discovered this method. At the end of this period observation was made as to the condition of the serum. Coagulated serum is a positive result; fluid serum is a negative result.

Part of the blood collected for the formalin test was received in a sterile test-tube and forwarded as a control to an independent well-recognised laboratory for the application of the Wassermann test. The following 11 cases were examined:—

CASE 1.—Female, aged about 30, of stunted growth, with no history of syphilis. X rays showed osteitis and periosteitis, and bowing of the tibiæ. Wassermann reaction (W.R.) negative. Formalin negative.

CASE 2.—Male, circ. 50, with no history of syphilis, but with symptoms suggestive of early G.P.I. and tabes. W.R. negative. Formalin negative.

CASE 3.—Male, 44, with a history of syphilis contracted 22 years ago. Was then treated for two months at St. Thomas's Hospital. Had now got rheumatoid arthritis, with two nodules (? gummata), one periosteal and one subcutaneous, on each elbow. Aching pains all over. Five depressed circular scars on glans penis. Tachycardia. Depression of bridge of nose, alleged to be due to trauma. Was put on pot. iod. gr. v. t.d.s., and five days later blood was collected. W.R. negative. Formalin positive. It is highly probable that a mistake was made with the formalin specimen by confusion of this with the following specimen collected at the same time.

CASE 4.—Male, 48, with unilateral pains in left arm and leg. History of "shell shock" three years ago, while patient was testing guns. There was an explosion and he was buried in a mound of ashes. At another time he was struck by the recoil and had the occipital part of his scalp cut open. Now he had a tumour (? osteophyte) on the right index. Frequent gastric crises in the last six months. No dyspepsia. Left spermatic cord thickened. Sleep bad, not due to pain. Ankle-jerks absent, plantar reflex flexor, knee-jerks and pupils normal. Alleged gradual failure of eyesight. Heart and lungs normal. Alleged dyspnœa on exertion. Patient very garrulous. Dental caries and gingivitis, buccal leukoplakia. No history of venereal disease. W.R. ++++. Formalin negative (or ? very slightly positive). See remarks under Case 3.

[1] C. R. Soc. Biologie, Nov. 20th, 1920.

CASE 5.—Male, 57. No history of venereal disease. Two months' history of present complaint. "Influenza" at onset, followed by synovitis of both knees, feet painful and cold. In bed three weeks. Now both knees hot and swollen with synovitis, œdema of legs, nothing else objective in joints; sleep bad on account of pain; tachycardia, systolic murmur at apex not conducted to left, cardiac sounds blurred and weak. Teeth all recently extracted; appetite good, bowels normal. W.R. negative. Formalin negative.

CASE 6.—Female, 41, with no history of venereal disease (she was not asked). Two months' history of present complaint. Pain began in tibiæ, but now includes lumbar and right inguinal regions. Had "jumping pains" in legs for some weeks before pain in tibiæ. Pleurisy five years ago; looks ill and is dark below the eyes. Sclerotics bluish. General pigmentation. Chronic ulcer of scalp and cranium, alleged due to trauma. Pain and swelling in left sterno-clavicular joint. Liver reaches umbilicus; tympanites elsewhere. Appetite poor; losing weight; teeth bad. Had "floodings" in the last two months. Six children ("health good"). One miscarriage ten years ago. W.R. ++. Formalin positive.

CASE 7.—Female, 11. No history of venereal disease (not asked for directly). Eight months ago had sudden pain in hips, knees, and left elbow, which were red but not swollen. Was feverish four months; in bed six months. Now left hip shows dorsal dislocation; neck of left femur thickened, appreciable manually. Hard glands below left sterno-mastoid. No signs of congenital syphilis. X rays show periosteitis of left femur. W.R. negative. Formalin negative.

CASE 8.—Male, about 25. History of recent gonorrhœa. Now has a small papule (? gonorrhœal wart) on glans penis, thinks it may be syphilitic, and asks for a blood test. W.R. negative. Formalin negative.

CASE 9.—Male, 42. No history of venereal disease. Four or five years ago he had sudden pain in back, knees, and ankles, while doing army drill in England. In hospital six weeks, of which three were spent in bed; went back to full duty. Pains on and off ever since. Altogether nine months in hospital before being discharged from the army two years later, having much improved. Present attack began six months ago, and he has been in bed on and off, but not for more than five days at a time. Pain worst in shoulders and knees; has done no work (as clerk) for six months; has 30 per cent. pension. Nothing of importance elicited in past history and family history. Shoulders and right elbow crepitate; nothing else objective in joints; pain in neck, periosteal node on left tibial crest, left foot gives Babinski's reaction; right plantar reflex flexor. Knee-jerks very sluggish, ankle-jerks absent; Argyll Robertson pupils; no Rombergism. Sleep bad, but not on account of pain; teeth ground down, gums fair. Flatulent dyspepsia. Appetite poor, bowels normal, heart and lungs normal; no cough. W.R. ++++. Formalin negative.

CASE 10.—Male, 56. No history of venereal disease. Has had present complaint six years, much worse the last three years. "Shooting and stabbing" pains in both knees. Has not been confined to bed, and has not been off work; is now improving. Nothing of importance elicited in past history. Father had "chronic rheumatic gout." Nothing objective in joints. Sleeps badly on account of pain in knees. Knee-jerks and ankle-jerks absent; pupils inactive, right pupil "pin-point," left pupil larger; cardiac sounds impure, teeth poor; lingual leukoplakia. Appetite fair; dyspepsia and constipation; no cough. Pre-sternal seborrhœid rash. W.R. ++++. Formalin positive.

CASE 11.—Male, 47. History of venereal disease denied. Six months ago there was gradual onset of pain in knees, and from left knee to left hallux. In bed two weeks, off work 13 weeks, now improved. Had "influenza" more than once; last occasion was four years ago; nothing else in past history. Mother had sciatica and two sisters were phthisical. Patient's left knee now much limited in movement with chronic synovitis. Genua vara, and tibiæ curved outwards since the age of 16. Walks with a stick, sleeps badly on account of pain, which comes on just before midnight. Knee-jerks and pupils normal; cardiac sounds sharp; teeth foul; appetite very good and bowels regular; no cough, lungs normal. W.R. negative. Formalin negative.

Analysis of Results.

Out of 11 cases the blood tests agree in 8. Of the remaining 3 it is highly probable that two formalin tests were confused one with the other. These two gave results as shown in the following table.

(*Continued from opposite page.*)

4. Dürck, H.: Uber fast totale Verkalkung einer Grosshirnhemisphäre bei einem erwachsenen Individuum, Atti del 1 Congresso Internazionale dei Patologi, 1911.
5. Marchand, F.: Discussion following Dürck's paper.
6. Meier, E.: Ein Fall totaler Erweichung beider Grosshirnhemisphären bei einem 5 Monate alten Kinde, Zeitsch. für Kinderheilk. und Phys. Erzieh., 1912, Bd. lxxvi., H. 5.
7. Sutherland and Paterson: Quart. Jour. of Med., vol. vii., 1913-14, p. 61.

Formalin Results of Two Cases.

Specimen.	W.R.	Formalin.	Syphilitic history.	Clinical evidence of syphilis.
Case 3 ..	Negative.	Positive.	Admitted.	Suggestive.
Case 4 ..	++++	Negative.*	Denied.	Very suggestive.

* Or ? very slightly positive.

In other words, it is highly probable that the formalin results of these two cases really agreed with the Wassermann test results, making the total agreements 10 out of 11, or over 90 per cent. Gaté and Pappacostas found 85 per cent. to agree, while Major J. Mackenzie[2] found 100 per cent. to agree in a series of 23 cases. On the other hand, A. Murray Stewart[3] in a series of 25 tests got 14 positive Wassermann reactions but no positive formalin reactions.

I am aware that a series of 11 cases is not of much value, and would have preferred to collect more. Unfortunately, I have not now the opportunity of continuing this research, so have decided to put together the little already done, especially in view of the fact that there is as yet little published evidence of the importance of this easily applicable test.

My thanks are due to Dr. D. Macmillan for coöperation in my tests.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Nov. 11th, Sir WILLIAM LISTER occupying the chair.

Exhibition of Cases.

Mr. HUMPHREY NEAME showed a case of cyst of Krause's gland, and also a lad, aged 16, with papular formations in the lid. A third case was that of a boy with tuberculosis of the conjunctiva. He cycled from London to Southend for a holiday, arriving very exhausted. After his return to work, while stooping down, he felt something give way in his left eye, and since then he noted a progressive failure of sight in that eye, and in six weeks he could only perceive with it fingers held fairly close. In September last year there were swellings in the neck, and in March this year a cough started, with watering of the right (the sounder) eye. At a hospital his condition was diagnosed as Hodgkin's disease; no signs of tuberculosis were elicited in the chest, and the sputum showed no tubercle bacilli. During the past year he had lost a stone in weight, but during the last three months his weight had remained constant. Four months ago the left eye was removed for irido-cyclitis. The cornea was hazy, and the anterior chamber was filled with a whitish substance. Mr. Neame exhibited sections of this eye on the screen, showing cellular and fibrous material in the anterior chamber, and destruction of iris and ciliary body. A small portion of conjunctiva excised from the right eye a month ago showed fairly typical tubercle formation.

Mr. LINDSAY REA showed a patient on whom he had successfully performed a Poulard operation for ptosis. He also showed a case of angeioma of the retina.

Mr. P. G. DOYNE presented a patient with congenital malformation of the iris and anterior chamber. There was an absence of anterior layers of the iris in many places, and a hole in each eye through which the red reflex could be seen. The angle of the anterior chamber was malformed and seemed to be filled by a whitish substance, while strands could be seen running from the posterior surface of the sclero-corneal junction to the anterior surface of the iris.

[2] Brit. Med. Jour., 1921, i., 854. [3] Ibid., 1921, ii., 263.

Sir WILLIAM LISTER recalled a case of a man who had nine pupils, one fairly central, the remaining eight being ranged peripherally round it. Eventually the man developed glaucoma, probably due to a developmental defect at the angle of the anterior chamber.

Mr. M. S. MAYOU and Mr. TREACHER COLLINS discussed the probable causation of coloboma with a bridge.

Mr. C. F. HARFORD read a paper on

The New Psychology in Relation to Problems of Vision,

demonstrating a number of schematic diagrams. He said that the attention of the psychologist had hitherto been mainly directed to the anatomical and physiological aspects of the problems associated with vision. Parsons, in his "Diseases of the Eye," after tracing the processes of vision from the impressions derived from external objects to the cortex, had used these words: "Here the nervous impulse is transformed into a psychic impulse, which is not, and probably never can be, understood." Mr. Harford contended that psychology could render important help in supplementing physiology, and that psycho-analysis had thrown new light on human thought. The mechanism of what Mr. Harford termed "The Psyche" he subdivided into cognition, affection (the emotional result of cognition) leading to action. One diagram represented the "store-chambers of the Psyche," which Mr. Harford classified as results of careful observation, results of casual observation, amnesia of common life, pathological repressions, infantile impressions, and instinctive and hereditary factors. He laid particular stress on the emotional factor of the Psyche—i.e., the activator of each mental concept, which Bergson had named the "énergie spirituelle." Mr. Harford went on to discuss repression, association, dissociation, and apperception. The vision of the infant was only gradually evolved, not because of any organic defect in the structures concerned with vision, but because the awakening of the intelligence was a gradual process.

Thrombosis of Retinal Vein, with Hole and Star at the Macula.

Mr. ARNOLD WILLIAMSON read a paper on Two Cases of Thrombosis of a Retinal Vein, one showing a Hole, the other a Star at the Macula. He first referred to the careful paper on holes in the macula published by the late G. Coats, in which were summarised the various theories of causation. Monteith Ogilvie considered there were two factors concerned: the fact that the retina is thinnest at the fovea, and thicker around it than elsewhere, and the fact that waves of disturbance passing through the eye meet at the posterior pole and tear the fovea by "contre-coup." Fuchs attributed the appearance in traumatic cases to mild traumatic retinitis, the slight serous exudate rupturing the membrana limitans externa, and so causing the appearance of a macular hole. Coats believed œdema was the underlying cause, stating that a hole had never appeared less than 60 hours after the injury; also that opacity in the retina had been observed after injury in a case in which a hole subsequently developed. In 1908, however, Kipp and Alt had published, in the *American Journal of Ophthalmology*, a case in which a shot passed through the orbit, tearing the optic nerve and its sheath and entering the skull. On the following day the retina was whitish and vessels narrow, except for a vein passing from macula to disc. At the macula was a red deep round spot, one-third D; two days later the retina was more opaque. Four days later the eye was excised, and there was a large hole at the macula, surrounded by swollen retinal tissue. There was evidence of œdema everywhere. Kipp and Alt considered that the retina at the macula could be torn by contre-coup. Mr. Williamson showed slides of his own case because they made clear the dependence of the formation of a hole in the macula on the occurrence of sub-retinal œdema, associated with thrombosis of the central retinal vein.

The first patient was a woman aged 62, whose sight began to fail 14 years ago. For two years, until excision of the eye in July last, she had continual pains in the head. The eye was excised because of absolute glaucoma. Thirty years ago she had a fall, blacking both eyes, but the sight was not impaired. The excised eye showed a corneal nebula, a cellular exudate adherent to the posterior surface of the cornea in places, hyaline exudate passing round the lens and causing some adhesion of the iris to it. There was no cupping of the disc. Sections were exhibited on the screen by means of the epidiascope, when there was an absence of the inner nuclear layer and inner reticular layer, and the retinal pigment layer was separated from the inner layer of the choroid. There was also some œdema in the outer molecular layer of the peri-macular region. The special point was that the cyst was formed not in the retina, but in the accumulation of œdematous material between the membrana limitans externa and the retinal pigment layer. In consequence of the presence of this cyst the outer layer of the retina appeared to undergo a degenerative process, so allowing of the formation of a hole.

Mr. Williamson also demonstrated a second case. In both cases there seemed to be a toxic influence, as shown by the irido-cyclitis, acting on the retinal veins and producing thrombosis, and acting on the delicate macular choroidal capillaries causing degeneration of their walls, increased permeability to fluid, and hence œdema. The fluid then osmosed through the potential space between the rods and cones and the pigment epithelium, preventing the access of nutrient materials from the choroido-capillaris, so that the superjacent retina degenerated and formed a hole.

Mr. MAYOU showed slides from a typical case of of albuminuric retinitis, showing exudation from two sites: inter-retinal and sub-retinal. The albuminous fluid in the layers of the retina was, he thought, derived from the retinal vessels, but the sub-retinal fluid from the choroidal vessels was of differing consistence, and responded differently to the stain.

SECTION OF PATHOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Nov. 15th, Prof. LAZARUS BARLOW, the President, being in the chair.

Dr. W. E. GYE communicated the results of work undertaken by him in association with Dr. W. J. PURDEY on the Poisonous Properties of Colloidal Silica.

Mr. A. T. GLENNY read a paper by himself and Miss K. ALLEN on

A Guinea-pig Epizoötic Associated with Dietary "Deficiency."

Owing to a failure in supplies no green food was available and guinea-pigs for a period of six weeks had mangolds only in addition to the basal diet of bran, oats, and hay. Immediately after the commencement of this diet a slight increase in death-rate occurred. Two to four weeks later the death-rate increased rapidly reaching to between 15 to 20 per cent. per week. The first animals to be affected were pregnant does, experimental and small animals. During the first four weeks the post-mortem and bacteriological examinations showed typical Gaertner infection, with a few cases of pneumonia during the third and fourth week. During the fifth and sixth week 76 per cent. of the deaths were due to bronchial pneumonia caused by *Bacillus fæcalis alkaligenes*. After the introduction of green food fresh cases of infection did not occur, and the death-rate reached the normal level of under 1 per cent. per week within two weeks. A series of experiments were performed showing that swedes were of more feeding value than mangolds, and that the presence of an efficient diet such as green food would entirely control the epizoötic. During these experiments no attempt was made at isolation; the animals used were all fed, cleaned, and handled by the same assistant, and the presence of deaths in the "deficient" cages and the absence of deaths in the "full diet" cages were sufficient to show that isolation was of little importance in the prevention of spread of infection.

Prof. F. HOBDAY discussed the Pathology of Cleft Palate in Animals, showing specimens and illustrations.

Mr. J. B. BUXTON and Mr. GLENNY described

The Active Immunisation of Horses against Tetanus

by means of mixtures of toxin and antitoxin. Five hundred horses tested had no normal tetanus antitoxin. An injection of 10 c.cm. of toxin containing in all 20 "test doses" and definitely over-neutralised with antitoxin was given three times at intervals of three days. A month later an immunised horse would tolerate a dose of toxin upwards of 2000 guinea-pig lethal doses, which was probably equal to several hundred horse minimum lethal doses. This method proved of great use in the large scale production of anti-tetanic sera during the war. In order to demonstrate to the War Office that it was possible to immunise army horses against tetanus arising from wounds, four horses were immunised with two or three injections of the mixture; about two months later they tolerated, without any symptoms of tetanus, 2 c.cm. of actively growing culture of the laboratory routine toxin-producing strain of tetanus, together with a suspension of sterile garden soil. A dose of 0·02 c.cm. killed rabbits and guinea-pigs. Smaller doses were not tested, though the toxicity probably went very much lower.

Dr. H. J. SUDMERSEN read a paper by himself and Dr. A. J. EAGLETON on the

Standardisation of Anti-Dysentery Serum.

The method had been in use at the Wellcome Physiological Research Laboratories for some 10 years. 1·0 mg. of dried dysentery (Shiga) bacilli, which was equal to 10 intravenous lethal doses for an 1800 g. rabbit, was mixed with dilutions of the serum to be tested, and after half an hour was injected intravenously into a rabbit. The rabbits that failed to survive died with the well-known syndrome of ascending paralysis and diarrhœa. The amount of serum necessary to neutralise the test dose of toxin was called one unit. Sera of some 400 units had been produced. The agglutinative did not run parallel to the real protective antibodies; it was therefore fallacious to accept the agglutinin titre as an indication of the therapeutic value of a serum. Charts of various horses showed that sera might have an agglutination titre of 2–4000 while possessing no protective antibody.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

AN ordinary meeting of this Society was held at 1, Upper Montague-street, W.C., on Nov. 18th, Dr. W. J. HOWARTH, the President, being in the chair. Thirty-two new members and four associates were elected.

Prof. E. L. COLLIS (Welsh National School of Medicine) delivered an address, as president of the Tuberculosis Group, on

Tuberculosis—Infection, Immunisation, Sensitisation,

in which he considered the causes which had brought about the great fall in tuberculosis that had occurred since the early part of last century. The disease was indefinite both in its clinical course and in its epidemiology; thus contrasting with such diseases as scarlet fever, mumps, and influenza, which had a definite incubation period, and ran a definite and short course clinically in the individual and epidemiologically in the community. Unlike these diseases, tuberculosis was "positively correlated" with the general death-rate. In this respect it resembled pneumonia. Clinical and epidemiological evidence suggested that in the case of tuberculosis, immunity, such as occurred with other infectious diseases, existed (it definitely did in the case of pneumonia), but was difficult to establish. The speaker rejected the theory that tuberculous invasion in the adult was to be ascribed to infection in early life. While certain diseases, like small-pox and leprosy, had been brought under control by specific measures (vaccination and isolation), others, like malaria and typhus, in this country had been reduced without any definite

campaign against them. Tuberculosis belonged to the latter group, and the recent campaign of notification and the dispensary and sanatorium had not yet had a fair opportunity of exhibiting its influence.

In considering the causes of the great reduction in tuberculosis, Prof. Collis remarked that the disease was a "pestis pauperum," being closely correlated with poverty. Underfeeding was probably the chief influence in this connexion, and this might be due to lack of vitamins as well as of calorific value in food. During the great war the lack of food and particularly of fat was accompanied by a marked rise in mortality from tuberculosis. In Prussia that mortality increased by 67 per cent. between 1913 and 1918, and rapidly fell later with the improvement in the food supply. It was found that in every country the disease rose amongst the civilian population with food stringency and fell when it ceased, while the armed forces, who were well fed, did not suffer in this way. Children of the breast-fed age also appeared to have escaped. The speaker then pointed out how the consumption per head of milk, butter, and sugar, but not of other foods, had risen in the past 50 years, while tuberculosis was declining. The increase in sugar was counterbalanced by the decrease in potatoes. This, and the figures for wheat, meat, bacon, and cheese, were against the idea that carbohydrate or protein foods were concerned, and pointed to the fat constituent of milk as being the important factor. The influence of milk had been explained (1) by the immunising effect of bovine tubercle bacilli, and (2) by its content of vitamins, particularly fat-soluble A. The latter appeared more probable. Prof. Collis then proceeded to discuss the opposite effects of increased infection and increased immunity due to infection, resulting from such conditions as the growth of population, its aggregation and industrialisation, and improved facilities for transport. He held that the greater resisting power of the white races as compared with the coloured did not show that white men had acquired a specific immunity. In conclusion, he referred to the inhalation of silica dust as presenting a case of definite sensitisation to tuberculosis, and gave an interesting summary of the case for regarding the presence of SiO_2 as a sine qua non in this connexion, the effect not being produced by silicates or by other forms of silicon nor by other kinds of dust.

Discussion.

Dr. F. E. FREMANTLE, M.P., remarked on the importance and difficulty of breadth of outlook, and said that it was unfortunate that historical studies usually did not go back more than 60 years. Undoubtedly tuberculosis was controlled by the question of wealth *versus* poverty, and vitamins might well be an important factor in this connexion. While vitamins were a subject of dispute amongst experts it was not advisable to make pronouncements to the general public. The forthcoming history of the war would deal with diet in relation to disease. He hoped that the society would soon form a Group for Industrial Diseases.

Prof. H. R. KENWOOD (University of London) said that he considered that there was no evidence for Dr. J. Brownlee's view that the fall in tuberculosis was epidemiological and that a corresponding rise was to be anticipated in the future. No doubt tuberculosis was a deficiency disease, but he pointed out the difficulty of determining which particular factor included in the complex conditions of poverty was responsible for tuberculous mortality. In regard to food, deficiency of the food itself might be as important as that of its vitamin content.

Dr. R. J. EWART (M.O.H., Barking) observed that the examination of recruits at Leeds had shown that at least 3 per cent. of the population had pulmonary tuberculosis without knowing it. He held that no system of examination of contacts would reach all these, and that complete segregation of cases was impracticable. He did not support Newsholme's view that the segregation of advanced cases in Poor-law institutions was an important cause of the decline of the disease. He agreed with Prof. Collis that food was a most important factor, but differed from other views he had put forward.

Dr. H. R. WILSON (T.O., Southwark) remarked that fatal cases were much more likely to produce secondary cases in the family than were mild cases. Mass infection was of great importance, and advanced cases ought to be segregated. If food was so important a factor the question arose whether good results might not be obtained by feeding up the patients at home instead of treating them in sanatoriums, which was so much more expensive.

Dr. F. G. CALEY (T.O., Wandsworth) questioned whether good feeding was so efficacious from the point of view of cure as of prevention. He had been impressed by the number of people who were in the closest contact with infectious consumptives—e.g., bed-fellows—and yet did not contract the disease.

Dr. J. SORLEY (T.O., Essex C.C.) said the more he knew of tuberculosis the less he understood it. No doubt the food question had considerable influence, but he doubted the conclusions drawn from the figures about food consumption put forward by Prof. Collis. A correlation ratio might be illustrative without being explanatory. He had seen many cases of tuberculosis in the affluent classes of society and they were often rapidly fatal.—Prof. COLLIS briefly replied.

MEDICAL WOMEN'S FEDERATION.

A MEETING of the London Association of the Federation was held on Nov. 15th at the Elizabeth Garrett Anderson Hospital, the President of the London Association, Dr. LOUISA MARTINDALE, being in the chair. A discussion on

The Physician's Responsibility in respect of the Sex Life of the Patient

was opened by Dr. CONSTANCE LONG and Dr. SYLVIA PAYNE.

Dr. LONG said that parents often brought children to the physician with complaints about masturbation or phases of lying or stealing or other marks of a neurotic disposition. These characteristics formed a well-known syndrome, originating in some psychic disturbance. In dealing with such a case she advocated that tactful inquiry should be made about the emotional atmosphere of the home. Investigation usually revealed some disharmony between the parents, and it was sometimes necessary to probe into the personal life of the forbears to obtain such an enlightened view as would secure an improved emotional environment for the child. She said that older children should never be allowed to share their parents' bedroom. Dr. Long dealt with the significance of masturbation in children. She defined masturbation as "self-generated eroticism" and said that it might arise from fantasy alone, without any friction, or from the contemplation of some representative object. The masturbation of puberty and adolescence was connected with tension both physical and psychical. At such a time, when the sex organs were developing fast, masturbation might be physiological and act as a safety-valve. Masturbation should not be punished; it would disappear with maturity, if the life led was normal. Dr. Long thought that medical students should have more definite teaching on the subject of sex relations before they encountered such problems in practice. Patients who asked advice on the subject of the frequency of coitus should be told that the mutual happiness and well-being of the two partners should be their guide.—Dr. SYLVIA PAYNE said that the history of primitive races showed that the present-day attitude to sexual problems was largely the outcome of ancient taboos and customs. The advance in psycho-analytical investigation had shown us that the psychical side of sexuality was as important as the purely physical. Women in general practice were continually consulted by newly married women for dyspareunia. If no physical defect was found, the difficulty was usually due to ignorance or fear, and the treatment was psychical rather than gynæcological, combined with a few practical hints. Dr. Payne then dealt with the relation of self-control to repression, repression being primarily an unconscious process, while self-control was a conscious function associated with volition. In married life mutual understanding was the basis of self-control, and newly married people should be advised to discuss these matters freely together.

Dr. MARY BELL, Lady BARRETT, Dr. HELEN BOYLE, Dr. MARY GORDON, and others also contributed to the debate.

MEDICAL SOCIETY OF LONDON.

A MEETING of this society was held on Nov. 21st, Mr. JAMES BERRY, the President, in the chair.

Colonel L. W. HARRISON opened a discussion on the

ARSENOBENZOL TREATMENT OF SYPHILIS.

He said that he proposed to confine his remarks to (1) a comparison of the different arsenobenzol compounds and methods of administration; (2) the toxic effects following administration of arsenobenzol; and (3) the extent to which arsenobenzol should be employed in the treatment of syphilis. Comparing the different compounds, Colonel Harrison considered that the modern "606" is not nearly so effective therapeutically as the preparation first given out in 1910. The latter was certainly more toxic, but elimination of toxicity seemed to be accompanied by some loss of therapeutic efficacy. The modern "606" was superior in efficacy to "914," and sodium salvarsan seemed to be between the two. Silver salvarsan seemed so far to have borne out the claims made for it—that it is about twice as effective as "914" in similar doses. Colonel Harrison had been pleased with its effect on the cerebrospinal fluid in syphilis of the central nervous system, even in general paresis. The method of administration influenced the therapeutic efficacy. In the early days "606" was given subcutaneously. Much of the dose was buried in necrosed tissue and lost, yet the effect was at least equal to that of a dose of 0·6 g. given intravenously. Subsequently Wechselmann claimed that the subcutaneous injection of neosalvarsan produced better results than the intravenous injection. This was confirmed by Harrison, White, and Mills in 1917. The disadvantage of the pain was overcome by the use of sulfarsenol, a similar preparation to "914," which caused no more pain than did an intramuscular injection of mercury. Colonel Harrison did not recommend sulfarsenol for intravenous injection, but its use subcutaneously had given him excellent results, especially in old cases with a strongly positive W.R. It offered a hope of treating syphilis for long periods without fear of toxic effects, because it was possible that smaller total amounts might effect our purpose.

Toxic Effects.

The various toxic effects fell into different categories. Those due to damage of vascular endothelium included (*a*) the vaso-motor symptoms; (*b*) the so-called encephalitis, hæmorrhagic nephritis, and cases of purpura hæmorrhagica; (*c*) dermatitis; and (*d*) damage to parenchyma of liver. Vaso-motor symptoms followed intravenous injections and seemed to depend on the physical state of the solution when injected. "606" was more prone to cause vaso-motor symptoms than "914," and silver salvarsan almost always upset a patient unless fairly well diluted, say to 10 c.cm. for each decig., and given fairly slowly. Of the "914" class of preparations those which dissolved with difficulty were more liable to upset the patient when given concentrated than the less soluble. It did not follow that a preparation which caused vaso-motor symptoms was necessarily bad. Sometimes it was therapeutically better than the preparation which caused no upset. It was unfortunate that animals were so insusceptible to vaso-motor effects, because a preparation might be issued to the public with an excellent record as judged by toxicity and therapeutic tests on animals, and then might have to be rejected because it upset patients when given rapidly in a concentrated form. Such a preparation could usually be given safely if well diluted, say to 10 c.cm. for each decig. In regard to vaso-motor symptoms and to reactions, such as severe diarrhœa and vomiting, it was a sound plan to inquire carefully into the technique and the quality of the reagents. The contents of the bottle labelled "Sterile distilled water" were not always so fair as the label implied, and mixing vessels and syringes might bear on their walls that which might upset a solution very badly. Dermatitis had become extraordinarily infrequent since the war, and this was possibly because the average patient was now less exposed to climatic vicissitudes. Dermatitis was very rarely associated with polyneuritis. One or two cases of aplastic anæmia had been recorded in cases of dermatitis, and Moore and Keidel had recently drawn attention to the destruction of leucocytes originating in bone marrow. The only reliable method of avoiding dermatitis was by taking warning from small signs of intolerance. The man who injected a dose of arsenobenzol week after week according to a set programme and without a careful scrutiny of the patient before each dose was subjecting his patient to an unnecessary risk. Jaundice seemed to be in a different category to the other toxic effects. Its likeness in many features to the liver disturbances caused by T.N.T. made it possible that we should ascribe it to arsenobenzol rather than to arsenic alone. Many features of jaundice made it probable that there was an adjuvant factor in its causation. Thus fatal jaundice had occurred at a certain period in a very few military hospitals, and in one of these it had happened in only one section. This occurrence of fatal jaundice in little groups resembling small epidemics had been experienced in other countries. There was much obscurity about the whole subject, and it was to be hoped that the biochemists would evolve a practical test of liver intolerance or even a preventive treatment, so that we could give as much arsenobenzol as was necessary to cure syphilis without fear of the hidden danger of serious hepatic disturbance supervening at a later date.

Arsenobenzol Compounds and Mercury.

With regard to the extent to which arsenobenzol should be used in the treatment of a case of syphilis, Colonel Harrison considered that the reliance now being placed in this country on mercury for continued treatment of syphilis after the W.R. had become negative was not justified by the past record of mercury. In 1913 he had shown in the case of over 400 soldiers that two years' treatment by mercury only left over 40 per cent. positive to the original, and over 70 per cent. positive to Stern's test. If mercury were our only remedy to-day we should be treating cases not for two years but for four or five. Nobody knew how much activity was hidden behind the veil of a negative W.R., but it might be considerable; we were not justified in thinking that, when the W.R. had been rendered negative, mercury would complete the cure. Colonel Harrison held that we should treat syphilis by the chronic intermittent method for many months after the W.R. had been rendered negative, and that arsenobenzol should be used in the continuation treatment as in the early stages. Otherwise we should require a longer period for the cure of syphilis than the patient was likely to allow us.

DISCUSSION.

Prof. H. MACLEAN said that a number of experiments had been performed with reference to the rôle of the liver in toxic jaundice due to arsenobenzol. It was found that after the ingestion of most sugars the blood-sugar rose rapidly from the normal figure of 0·10 per cent. to 0·17 per cent. in about an hour, but after this a rapid fall occurred below normal owing to the action of the liver in storing carbohydrate. When levulose was given, however, the blood-sugar remained remarkably constant at about the normal 0·10 per cent., unless the liver were inefficient when it rose to 0·15 or even 0·18 per cent. Such a rise was found to occur in arsenobenzol jaundice. Even a small dose of arsenobenzol was found to affect the blood-sugar curve. He thought this levulose test might be useful in prognosis, and in one case had given a truthful prophecy of a good result from treatment when the clinical outlook had been grave. The liver was less likely to be affected by arsenobenzol when it was in a healthy condition and carried its normal glycogen content; some of the disasters that had followed the use of arsenobenzol were due to its being given to ill-nourished and even starving patients. To such patients he advised giving 50 g. of glucose about an hour before the injection.

Pathology of Fatal Cases.

Dr. J. W. MCNEE remarked on the unreliability of the statistics of fatality after arsenobenzol injection. Not all deaths from this cause were so reported. The vaso-motor effects were never fatal, so that little was known of their pathology. Dermatitis and encephalitis hæmorrhagica were due to the effects of the drug on the vascular endothelium. In fatal cases of exfoliative dermatitis hæmorrhages occurred in the lungs and these became infected by micro-organisms. Jaundice and acute yellow atrophy of the liver had recently been studied in Germany, and the view was held that the increased frequency of these complications in Germany since the war was due to the lowered standard of nutrition. Pathologically acute yellow atrophy appeared to be a toxic rather than infective condition.

Hepatic Efficiency Tests.

Dr. R. L. MACKENZIE WALLIS said that the observations on the toxicity of arsenobenzol compounds have been carried out with a view to determining, by means of certain functional tests of hepatic insufficiency, the effects of administration of these arsenical compounds. Where definite focal necrosis or acute yellow atrophy follows, the signs and symptoms are generally so obvious that confirmatory tests are seldom required. The aim has been to ascertain whether single or repeated doses of arsenobenzol derivatives can or do produce any changes in liver metabolism, and whether the effects are immediate or remote. For this purpose three tests have been applied—viz., the levulose tolerance test, already described, the lipase content of the serum, and the cholesterol content of the serum. Applying the levulose test to patients receiving treatment for syphilis it was found that one injection did not produce any rise of blood-sugar with one exception. The same result was obtained after six injections. When, however, the patients were tested 2–3 months after the last injection the levulose tolerance test showed a definite rise; further, the normal blood-sugar content was found to be raised, and in many cases accompanied by slight glycosuria. Six months after this disturbance of carbohydrate metabolism following arsenobenzol compounds, the liver appeared to have regained its normal function. The lipase content of the serum had proved a simple and reliable test for watching the effects of arsenobenzol compounds on the liver. There was a distinct and steady rise in the lipase content of the blood after six injections, and just as in the case of the levulose tolerance test, the maximum effect was observed three months afterwards. The test was applied to the serum obtained for the Wassermann reaction, and 2 to 4 c.cm. were required, the method used being that described by Whipple and others. The cholesterol content of the serum appeared to run in opposition to the lipase content, the amount decreasing with the corresponding increase in the lipolytic activity of the serum. This relationship between cholesterol and lipase was of particular interest and might provide a possible explanation of the changes in the Wassermann reaction following treatment. The results demonstrated the following points—viz., the toxic action of arsenobenzol compounds was exerted sometime after treatment was suspended, and it appeared inadvisable to recommend a second course of treatment within six months of the previous course. If such was necessary and unavoidable then these tests should be applied, and the nature and dosage of the drug regulated accordingly. Cases showing evidence of previous hepatic damage should also be treated along the same lines. Since arsenobenzol compounds produce changes in the liver with disturbance of carbohydrate metabolism, it is advisable to test the patients for glycosuria three months after the last injection. In order to avoid unfavourable results, it would appear advisable to regulate the diet so as to avoid any undue strain upon the liver, particularly towards the end of a course of treatment.

Scheme of Treatment.

Dr. H. MACCORMAC said that in treatment there were two points to be considered: (1) the patient, (2) the disease. It was not much advantage to the patient to be cured of the disease if he were severely poisoned by the treatment. Primary and secondary cases could be cured, but in tertiary and late cases he had yet to discover any form of treatment that would render the Wassermann reaction permanently negative. Salvarsan, he thought, merely reduced a raging fire of infection to a smoulder; he therefore relied on mercury to complete the cure. For early cases he pushed the treatment; for the first week he gave 0·6 g. of N.A.B. intravenously, combined with 1 gr. of mercury intramuscularly, and for each succeeding week up to ten weeks 0·9 g. of N.A.B. with 1 gr. of mercury. This was followed by an intermittent course of mercury for two years. He maintained that mercury gave the only certainty of cure, and quoted cases treated in the early days of "606" by only two or three doses of "606" followed by two years of mercury treatment which still appeared cured. It was hardly probable that two or three doses of "606" had achieved this. For late cases he prescribed a short course, followed by occasional treatment as symptoms arose. He personally preferred the intravenous method of administration of arsenobenzol compound to the intramuscular.

Animal Experiments.

Dr. H. H. DALE did not agree with Colonel Harrison as to vaso-motor effects not occurring in animals. By animal experiments the vaso-motor effect of each batch of arsenobenzol could be accurately determined. Owing to toxic effects in animals manufacturers had, at one time, turned their attention to the reduction of toxicity, with the result that the therapeutic value of the drug was lowered. It was then established by further animal experiments that the vaso-motor effects and therapeutic value of any batch were parallel. Both effects were due, he thought, to the slow production of arsenious oxide in a colloidal state in the blood, and the vaso-motor effects were of an anaphylactoid nature. The toxic effect on the liver was due not to the arsenic, but to the organic portion of the arsenobenzol molecule; it very closely resembled that seen in tri-nitro-toluol poisoning. Animal experiments showed that silver salvarsan had the greatest therapeutic effect.

Arsenobenzol Poisoning.

Sir WILLIAM WILLCOX had seen many fatal cases of arsenobenzol poisoning and agreed that cases were commoner than was supposed. The effects observed were very similar to those of tetrachlorethane, tri-nitro-toluol, and other organic poisons, and could therefore not be due to the arsenic portion of the molecule; indeed, inorganic arsenic in fatal doses had no effect on the liver. Death in toxic jaundice and acute yellow atrophy was due to auto-intoxication following liver insufficiency. When cases of acute yellow atrophy recovered, as a few had done, the enlargement of the liver gave place to a shrinkage, accompanied by ascites; this was due to replacement fibrosis of the degenerated area. In conclusion, he said he was staggered by the dosage of arsenobenzol recommended by one of the previous speakers.

Colonel HARRISON, in reply, said he thought batches of arsenobenzol compounds which exhibited marked vaso-motor effects should be specially noted and given very dilute. As regards a scheme of treatment, he had found from experience that a rest for a week at the third and fifth weeks was advisable.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on Nov. 9th, Mr. CYRIL H. WALKER, the President, being in the chair, when Dr. CECIL CLARKE opened a discussion on

Renal Efficiency Tests.

His remarks were based on a series of 50 cases carefully investigated in association with Dr. J. O. Symes, at the

Bristol General Hospital. Dr. Clarke pointed out that as the main function of the kidney was to excrete urea, tests of its efficiency should be tests of excretion of urea rather than of other bodies. Clinical experience, as well as experiment, had shown that the power to excrete urea was, like other vital functions, carried on in health with a large margin of reserve tissue not actually in use. It was the gradual destruction of this margin by disease that the diagnostician aimed to discover. The usual clinical symptoms were not produced till the kidney had lost two-thirds of its urea-excreting tissue, and the object of renal efficiency tests was to anticipate the symptoms in demonstrating the encroachments of disease. Dr. Clarke mentioned three methods of estimating the urea outflow: the two-hour renal test, the urea-concentration test, and the estimation of blood-urea. By means of charts Dr. Clarke demonstrated the close parallelism between the curve of fluid outflow, as demonstrated by the two-hour renal test, and the output of urea; so close was this relationship that he had learnt to regard the two-hour renal test as the most valuable of the simple means of watching the renal functions. Dr. Clarke said that it was possible by means of this test and particularly by noting the ratio between the diurnal and the nocturnal output of urine, to detect earlier phases of disease than by the urea-concentration test. He alluded to the phenol-sulphonephthalein test, particularly in relation to the estimation of the efficiency of the "surgical" kidney, and said that though it was a rough index of efficiency in such cases, the estimation of blood-urea afforded more reliable data. With regard to blood-urea estimations in diffuse nephritis, Dr. Clarke had found that whereas in chronic nephritis there was usually evidence of considerable nitrogen retention, in the acute and subacute varieties this was usually less marked. A rising percentage of urea in the blood in any such case was, according to general agreement, of grave import. In circulatory failure, unaccompanied by primary renal disease, there might be a considerable rise in the percentage of urea in the blood.

Dr. J. O. SYMES then gave an account of his experience of renal efficiency tests in five years' private and hospital practice. The blood-urea test was accurate and reliable, but too laborious and complex for routine use. The two-hourly renal test was the one he had found to be most useful in practice, because it combined simplicity with accuracy. The urea-concentration test was not ideal for private practice, because of the difficulty of controlling the dietetic and other conditions under which the test was made. Dr. Symes had found renal efficiency tests of value in diagnosis; for example, in cases of arterio-sclerotic kidney the grade of efficiency was relatively high, while in contracted granular kidney it was low. From a prognostic point of view Dr. Symes found the blood-urea estimation of most value; this was also useful in treatment, since a high blood-urea figure indicated a reduction of the nitrogenous elements in the diet.

The Laboratory Point of View.

Dr. GEOFFREY HADFIELD gave an account of the tests from the laboratory point of view, speaking of them from three aspects: the possibility of simplification, the correlation of test results with post-mortem findings, and the localisation of intra-renal disease (for example, the distinction between glomerular and tubal lesions). In particular he described means of controlling the hypobromite method of estimating the urea in urine, and the urease method of estimating urea in blood and in cerebro-spinal fluid. There were, he said, wide divergences between the results of these tests and the anatomical changes found post mortem, due in part to the element of circulatory failure, local as well as general, which entered into a majority of renal deaths, in part to the capacity for compensating changes, physiological and anatomical, which the diseased kidney displays; due also to the fact that in most diseased kidneys the changes are local and not evenly distributed. Some margin had also to be allowed for autolysis of the renal tubules ensuing after death. Dr. Hadfield's remarks were illustrated by a series of lantern-slides from microphotographs, among them specimens taken from a living kidney which had been treated surgically by decapsulation.

Dr. A. T. TODD alluded to the diastase test, also to certain French methods of estimating the chloride output and the diurnal variations in specific gravity.—Dr. J. R. CHARLES criticised the prognostic application of renal efficiency tests on the ground that at best they only foretold the approach of uræmia, a mode of breakdown responsible for only a small percentage of renal deaths.—Dr. O. C. M. DAVIS described certain inaccuracies of the hypobromite estimation of urea in urine.—Mr. J. LACY FIRTH, speaking from the surgical point of view, supported the indigo-carmine and ureteral catheter methods, particularly for cases where it was desired to measure the relative efficiency of the two kidneys.—Dr. J. A. NIXON asked whether the tests did not tend to the formation of too favourable a prognosis.—Drs. CLARKE, SYMES, and HADFIELD replied.

NORWICH MEDICO-CHIRURGICAL SOCIETY.

AT the opening meeting of this Society, held at the Norfolk and Norwich Hospital, the chair was taken by the newly-elected President, Dr. WILLIAM WYLLYS, of Great Yarmouth.

Dr. A. F. HURST (London) delivered an address on

Psycho-therapy,

illustrated by kinematograph pictures. He emphasised the benefit derived by patients suffering from organic disease of the nervous system, through the relief and cure by psycho-therapy of the functional element always associated therewith. He laid great stress on the following methods: (1) Explanation, after due physical examination and questioning; (2) persuasion; and (3) re-education, which should be carried out in a short space of time, and not allowed to drift into a matter of weeks and months. By this system Dr. Hurst said he had cured ordinary fainting, vomiting of pregnancy, flatulence, chronic constipation, mucous colitis, and chronic rheumatoid arthritis. His address was followed by an interesting discussion.

A Clinical Meeting was held on Nov. 1st, when the following cases and specimens were shown:—

Dr. G. P. C. CLARIDGE showed a woman and a child suffering from lupus of the face. Both had been treated by various ointments and other applications with indifferent results, but had greatly improved under injections of tuberculin. He used the old T.R. and thought it was most important to push it. He began with an initial dose of 1/50,000 mg. and the woman was now having a dosage of 1 mg. and the child 1/3000 mg.

Dr. A. J. CLEVELAND showed a case of a young woman with definite symptoms of disseminated sclerosis, following an attack of encephalitis lethargica. He thought there was a distinct connexion between the two diseases.—Dr. V. H. BLAKE recalled a very similar case which he had diagnosed as encephalitis lethargica, but which was considered by a consultant to be one of disseminated sclerosis. The patient, however, ultimately recovered—a point in favour of Dr. Blake's diagnosis.

Dr. CLEVELAND also showed a man, aged 38, with general tremors, and a boy, aged 13, with hysterical paraplegia following on an attack of tonsillitis and rheumatism. The boy firmly believed that he could not walk, although there was no real paralysis, and the reflexes were normal.

Mr. CECIL MURIEL showed a case of total ophthalmoplegia of the left eye in a young woman who had been under his care at the Eye Infirmary. The attack began with headache, and two weeks later diplopia and ptosis developed. There was then complete paralysis of the third, fourth, and sixth cranial nerves—in Mr. Muriel's experience a very rare condition. There was a positive Wassermann reaction, but no history of syphilis could be obtained, although the patient had a child a few years ago who had congenital syphilis. She had been treated by injections of novarsenobillon, as well as by mercury and iodides. There was no appreciable improvement for six or seven weeks, but Mr. Muriel said that she could now raise the lid slightly and could turn the eyeball inwards, though unable to move it outwards at all.

Mr. T. W. HANCOCK brought forward two cases. The first was a boy of 14, suffering from fragilitas ossium. The history was that both arms and both legs were fractured at birth, whether in utero or during delivery was not clear. The bones were so brittle that the very slightest injury served to break them; the right thigh had been fractured eight times, the left thigh once, and the clavicle once. The fractures always united well. The boy was very stunted in growth, but his intelligence was excellent, and his pituitary functions normal. Radiograms of the fractures were exhibited. Mr. Hancock's second case was brought for diagnosis. It was a small girl with a new growth at the base of the skull, over the frontal bone, which pressed down on the eyeballs and seemed to be increasing in size. Quite recently swellings had developed in both wrists.—Various opinions were expressed by members as to the probable pathology of these tumours, but no definite conclusion was reached.

Dr. E. B. HINDE showed a case of hemianopia, with fits of the nature of Jacksonian epilepsy.

The following specimens were shown:—1. Mr. A. J. BLAXLAND: Volvulus of the sigmoid, removed from a man of 55. 2. Dr. HINDE: Three placentæ—(*a*) Placenta succenturiata; (*b*) velamentous insertion of cord; (*c*) twin pregnancy with hydrammios. 3. Dr. A. CROOK: Microscopical section of a placenta in a case of toxæmic vomiting. 4. Dr. S. H. LONG: Sarcoma of liver from an infant of nine weeks. 5. Mr. E. W. EVERETT: Enlarged gall-bladder, with hard thickened coats like tough leather.

Reviews and Notices of Books.

AN INTRODUCTION TO BIOPHYSICS.

By DAVID BURNS, M.A., D.Sc., Grieve Lecturer on Physiological Chemistry in the University of Glasgow. With a Foreword by D. NOEL PATON, M.D., LL.D., F.R.S. London: J. and A. Churchill. 1921. With 85 illustrations. Pp. 435. 21s.

Prof. Noel Paton in a foreword to this splendid book points out that as long ago as 1878 physiology was defined as the application of physics and chemistry to the study of the body in action. At that time the application was limited, because ionic dissociation was scarcely recognised, Graham's work on colloids not appreciated, and surface-tension phenomena not yet applied to molecular physics. Phenomena were recorded rather than explained—that is, "what happens" instead of "why it happens." The incorporation of physics and chemistry into physiology has led to its division into biophysics and biochemistry. Dr. Burns, who is now professor of physiology at the University of Durham, discusses only the physical aspect and explains, as far as is at present possible, the various life processes in terms of physical laws. He divides his subject-matter into five sections: (1) energetics, (2) cellular mechanics, (3) cell communities, (4) transport, (5) the animal as a whole; excellent illustrative experiments are given in the last part of the book.

Energy is the underlying cause of all changes in matter; no change occurs without free energy. The laws and kinds of energy are explained by Dr. Burns, and a useful scheme is drawn up to show that the total energy of the universe is partly free kinetic energy, available for work, and partly energy not directly available, of which some is lost as heat (entropy) and the remainder converted into free energy on being started by kinetic energy. The author shows that a continuous supply of energy is demanded for life processes, and that this is derived from the kinetic energy of the sunlight, which is converted into potential energy by the chlorophyll of the plant and forms our foodstuffs. Energy is measured in terms of heat; every foodstuff is ultimately changed into heat, undergoing various changes in the process. It is erroneous, according to Dr. Burns, to consider the animal as a heat engine which works between wide ranges of temperature to convert potential into kinetic energy; it is a much more complicated system, deriving its kinetic energy from the products of digestion by physico-chemical processes in solution. Substances in solution exert an osmotic pressure (kinetic energy) comparable to gas pressure, which is due to the bombardment of the molecules on the walls of the containing vessel, and at the same time alters the surface-tension of the liquid, at the surface of which, in contact with air or any other medium, there exist electrical charges.

Dr. Burns goes on to describe the three classes of substances which may be present in solution—non-electrolytes, electrolytes, and colloids. The dissociation of electrolytes, with slight changes in hydrogen-ion concentration, governs the osmotic pressure and produces changes in the surface-tension. Colloids with their large surface function act as a storage medium of potential energy; adsorbed salts are rendered osmotically inactive and by their property of imbibition they can act as reservoirs of hydraulic pressure. Enzymes, which are probably colloidal in their nature, produce alterations and can act as contact agents, ionic catalysts, or carriers. The cell membrane is affected by these changes either by a change in itself from within or by materials presented from without, and its permeability is so altered that material can pass in or out. Dr. Burns shows that while originally all these changes took place in a single cell, evolution has elaborated special groups of cells for specific purposes. The muscle cells convert potential energy into kinetic energy and heat in three stages. Surface energy is the form of energy associated with muscular contraction. As the researches of A. V. Hill have shown, lactic acid is set free and produces alterations in hydrogen-ion concentration and surface-tension; oxygen is not required at this stage, but is utilised in the second stage of restitution in which carbon dioxide is evolved and lactic acid returns to the muscle substance.

Several physical processes are concerned in the numerous functions of the blood. Clotting seems to consist in the liberation from blood cells or tissues of kephalin, peculiar in its colloidal properties; it forms a surface upon which the thigmocytes in presence of calcium spread themselves and rupture, to set free thrombin and the consequent formation of fibrin gel from fibrinogen sol. The crystalloid concentration is maintained largely by the colloidal properties of the globulins; the chief salt of the blood, sodium bicarbonate, is concerned as a buffer from its power of neutralising acid. Association of oxygen with hæmoglobin is a function of partial pressure of gases; the dissociation being helped by temperature and especially by acid. The gaseous exchange in the lungs is by diffusion, though in special circumstances secretion may occur. Gas exchange at high altitudes and at high pressures (diving) is also considered.

These are only the briefest summaries of the wonderfully succinct account of the functions of all parts of the body from the physical aspect given by Dr. Burns. A final chapter is contributed by Prof. E. P. Cathcart on the efficiency of the animal. The physics and physical chemistry of osmotic pressure, ionisation, colloids, hydrogen-ion concentration, partial pressure of gases, and other phenomena are all separately and carefully explained, so that the reader can easily follow their application to physiology. The book cannot be too highly recommended, for it gives in a concise and interesting form a description of most of the modern problems in physiology.

THE HOT SPRINGS OF NEW ZEALAND.

By ARTHUR STANLEY HERBERT, O.B.E., M.D., B.S. Lond. London: H. K. Lewis and Co., Ltd. 1921. Pp. 284. 15s.

NEW ZEALAND abounds in natural springs, both hot and cold, of high remedial value, and Dr. Herbert, who writes of them, has had intimate experience of them for many years as Government balneologist at Rotorua, the principal health resort in the North Island. His book is conveniently divided into three parts: the first part descriptive and containing numerous excellent full-page photographs of the thermal regions with geysers in action, and chapters of Maori life; the second part giving the composition of the various waters and their effects; the third part setting out the author's deductions on general principles.

Rotorua as the leading spa of New Zealand receives most attention. Here the Government has effectually assisted the natural development by building a fine sanatorium with modern baths and appliances, in which the famous Rachel spring water is applied. Various other spas, such as Helensville, Te Aroha in the North and Hanmer in the South Island, are touched upon more lightly, and mention is made of potential spas such as Kamo, Waiwera, and the high bracing resorts of Wairakei and Taupo. It is quite obvious that these resources have not been utilised as yet to anything approaching their real extent, and that New Zealand has a great asset in her climate and medicinal spas, which if developed in the future will place her in the front rank of the world's health resorts. At Ohaewai, for instance, the hot water and steam have decomposed the cinnabar ore, so that mercury has been deposited in visible metallic globules in the hot mud, a combination which, as the author remarks, would excite the envy of the authorities at Aachen. Taupo offers a combination of hot sulphur and chalybeate waters with alpine climate, for which the only parallel can be found in the Engadine.

An interesting chapter in the second part of the book deals with the classification of "rheumatic"

diseases and is based on the author's own experience of the jaw-neck syndrome, the presence of which he regards as of cardinal importance. His views on this point are set forth in an original article on p. 1097. More might reasonably have been said on the influence of environment, climate, and suggestion in the last chapter, for, as the author points out, the spa physician undoubtedly finds that environment greatly facilitates the use of the suggestive treatment, which is consciously or unconsciously employed by every medical man every day of his life. Dr. Herbert's book appears at an opportune time and is a welcome addition to the literature of climatic therapy.

PHARMACY.

Pharmacopœia of the University College Hospital. Edited by CHARLES H. HAMPSHIRE, B.Sc. Lond., F.I.C., Ph.C., Pharmacist and Teacher of Pharmacy to the Hospital. London: John Bale, Sons and Danielsson, Ltd. 1921. Pp. 96. 4*s*.

THIS hospital pharmacopœia contains a list of the special pharmaceutical preparations used in the University College Hospital. Twenty-five new formulæ have been added, five have been deleted, and a children's section has been formed. The book includes much useful miscellaneous information upon diet, urine analysis, the blood, staining of bacteria, treatment of poisoning, &c.; many of these sections have been revised and partly rewritten by Dr. G. W. Goodhart, clinical pathologist to the hospital.

BLOOD DISEASES.

Polycythæmia, Erythrocytosis and Erythræmia (Vaquez-Osler Disease). By F. PARKES WEBER, M.A., M.D., F.R.C.P. London: H. K. Lewis and Co., Ltd. 1921. Pp. 148. 21*s*.

IN this monograph Dr. Parkes Weber reviews the subject of polycythæmia in all its bearings. The author's experience of the numerous and somewhat uncommon clinical conditions which he describes, his extensive knowledge of the literature, and his personal acquaintance with many of the cases, both published and unpublished, of other observers make the work an important contribution to the knowledge of polycythæmia, and a valuable book of reference.

Polycythæmia is defined as a condition of the blood in which the number of red blood corpuscles is decidedly above the average. It occurs in two forms; in one the increase in red blood corpuscles is relative and due to a concentration of the blood, in the other it is absolute (true) and there is an actual increase in the total number of red corpuscles in the body. Two forms of absolute polycythæmia are recognised—namely, erythrocytosis and erythræmia. Erythrocytosis is analogous to leucocytosis and results from an increased activity of the erythroblastic tissues in response to the call made by such conditions as living at high altitudes, chronic cardiac and pulmonary disease. Erythræmia is analogous to leukæmia, and is described as due to an excessive erythroblastic activity of the bone-marrow, which appears to be the primary morbid factor in the condition.

The characters of the blood and the state of the bone-marrow in absolute polycythæmia, as also its ætiology, are described in Part 1. Erythræmia in all its aspects is described in Part 2, while a valuable appendix gives an account of the post-mortem findings in cases of erythræmia and splenomegalic polycythæmia; a second appendix contains a record of remarkable or obscure cases of polycythæmia. Part 3 contains a short account of a number of hitherto unpublished cases, and a considerable body of literature, mostly issued since 1908. Scattered through the several records in this chapter are many discriminating comments which throw light on the relation to polycythæmia of such conditions as polycythæmia hypertonica, "Ayerza's disease," syphilitic arteriosclerosis of the pulmonary arteries, described by Warthin, phlebitis spleno-portalis, and thromboangiitis obliterans of Leo Buerger. Taken as a whole, the cases detailed in this chapter emphasise the importance of chronic arterial disease in its relation to secondary polycythæmia; at the same time a careful study of its contents makes the reader realise that, though splenomegalic polycythæmia may be easily recognised as a clinical entity, the diagnosis of erythræmia requires uncommon knowledge and care. In a final chapter Dr. Parkes Weber discusses some aspects of his main thesis that erythræmia is a primary disease of the bone-marrow.

THE PROSPECTIVE MOTHER.

Second edition. By J. MORRIS SLEMONS, M.D., Associate Professor of Obstetrics, Johns Hopkins University. London and New York: D. Appleton and Co. 1921. Pp. 343. 9*s*.

THIS book, the first edition of which appeared in 1912, is described by the author as a "handbook for women during pregnancy," and appears admirably to fulfil this function. The 12 chapters cover most of the essential points in the intelligent care of the pregnant woman as regards general hygienic measures, both antenatal and postnatal, the author striking a happy medium between the very elementary teaching often to be found in similar handbooks, and the more technical instruction proper for the use of students and midwives. A glossary is provided for the explanation of the few technical words the use of which was unavoidable. The chapters on the anatomical and physiological changes involved in the development of ovum and embryo are adequate and clearly written, and should prove interesting to prospective mothers.

While there is nothing outstandingly new or original in the volume, the second edition is well abreast of the more modern teaching, especially as regards infant feeding. We note that the author is doubtful as to the value of "twilight sleep" anæsthesia which, in his opinion, has not stood the test of a fair trial. The book may cordially be recommended to young wives and mothers.

ENCYCLOPÆDIA MEDICA.

Second edition. Under the general editorship of J. W. BALLANTYNE, M.D., C.M., F.R.C.P. Edin. Vol. VII., Intestine to Labour. London and Edinburgh: W. Green and Son. 1921. Pp. 611.

THE most important section in this volume is that dealing with labour, occupying as it does some 260 pages. It consists of a series of sections contributed by different writers dealing with all the conditions of normal and abnormal labour. The articles contain a good account of the subject, and are of particular interest at the present time; they are largely conservative in their teaching and are representative of all that is best in the Edinburgh school of obstetrics. A great deal of the matter contributed by the original authors in the first edition has been left unaltered. For example, that dealing with Precipitate and Prolonged Labour by the late Dr. Herman has, it is true, been revised by Dr. R. W. Johnstone, but it still retains all the essentials of the original. We need hardly say that it is admirable in its conception and treatment of this important branch of midwifery, particularly that part dealing with primary and secondary uterine inertia and obstructed labour, the "very key-stone," as the late Dr. Braxton Hicks used to say, of sound practice in midwifery.

Dr. Haultain deals with the Physiology of Labour and the operation of Version; Dr. Ballantyne with the Stages of Labour, the Management of Labour, Post-partum Hæmorrhage, Accouchement Forcé, Symphysiotomy and Pubiotomy; Dr. W. E. Fothergill with Faults in the Passenger and the Induction of Premature Labour; while other articles are contributed by Dr. T. W. Eden, Dr. Amand Routh, Dr. W. R. Dakin, Dr. Murdoch Cameron, the late Dr. W. Stephenson, and the late Sir Alexander Simpson. The teaching, on the whole, is sound, as would be anticipated in view of the reputation of the contributors. The advice to induce premature labour by the old-fashioned manual dilatation rather than by bougies or a hydrostatic

bag is surprising. In view of the uniformly good results given by the use of bougies, especially when several are introduced and care is taken to separate the membranes round the internal os, there would seem no advantage in the unnecessary repeated interference which manual dilatation entails. Some of the other articles would have been improved by being brought more fully up to date, for instance that on Cæsarean section, but the originals were so good that we can understand a disinclination for change. The article on the resection of the sacral promontory, an operation which we thought had long ago been entirely abandoned, might well have been omitted.

In spite of these criticisms the whole may be regarded as an excellent guide to a practical knowledge of the subject with which it deals.

JOURNALS.

BIOCHEMICAL JOURNAL. Vol. XV., No. 4. 1921.—Some Observations on the Hæmolytic Action of Certain Quinine Salts on the Erythrocytes of Different Individuals and on the Resistance of Newly-formed Red Corpuscles to Hæmolysis under the Influence of Distilled Water, by U. N. Brahmachari and P. Sen. (1) Quinine salts are less powerfully hæmolytic than equimolecular solutions of the acids they contain: glucose seems to inhibit the hæmolysis produced by quinine. (2) The resistance of the fowl's corpuscles to water hæmolysis is increased after repeated bleeding.—A Method of Estimating Phenylhydrazine Volumetrically and its Application to the Estimation of Pentosans and Pentoses, by A. R. Ling and D. R. Nanji.—On Carrageen (*Chondrus crispus*). II. On the Occurrence of Ethereal Sulphates in the Plant, by P. Haas.—"Fumed" Oak and Natural Brown Oak, by C. K. Tinkler.—A Method for the Preparation and Recrystallisation of Oxyhæmoglobin, by H. W. Dudley and C. L. Evans.—Pure oxyhæmoglobin, being less soluble than reduced hæmoglobin, is precipitated in crystals when a strong solution of reduced hæmoglobin is treated with oxygen.—Feeding experiments in connexion with Vitamins A and B: (1) The Value of Steam-distilled Palm Kernel Oil as a Control Fat. (2) Wheat Bran as a Source of Vitamins A and B, by A. D. Stammers. Steam-distilled palm-kernel oil forms a convenient vitamin-free fat for diet experiments. Bran is shown to contain vitamin A sufficient to produce growth as good as that obtained on a butter-fat diet, and there is no reason to believe that the antineuritic properties of bran are inadequate.—The Behaviour of Pectin towards Alkalis and Pectase, by F. Tutin.—Further Observations on the Digestion of Fibrin and Caseinogen by Trypsin, by E. S. Edie. Comparisons of the power of pancreatic extracts to clot milk and to digest caseinogen and fibrin under various conditions of acidity, age, &c., suggest that these actions are brought about by distinct enzymes or at least by different groups of one complex enzyme molecule.—A Note on the Question of the Identity of Gastric Rennin and Pepsin, by E. S. Edie. The gastric rennin appears to be a different enzyme from pepsin. The newly-born rabbit's stomach contains rennin but not pepsin, the adult stomach gives pepsin but not rennin.—The Estimation of Non-Protein Nitrogen in Blood by a Micro-Kjeldahl Method, by E. L. Kennaway. The technique is adapted for clinical work.—Denitrification as a Means of Sewage Purification, by E. A. Cooper. It is shown by experiment that considerable economy can be introduced in sewage purification by mixing part of the sedimentation tank liquor with the filter effluent, and thus employing the nitrate present in the latter for destruction of the more readily fermentable material in the former.—A Method of Protein Removal from Body Fluids for the Purpose of Simultaneous Determination of Many Constituents, by G. Mukai. The proteins are mainly precipitated by means of a hot aqueous sodium acetate-acetic acid mixture, any small residue being adsorbed by talcum powder. Chlorine, non-protein nitrogen, and sugar can be estimated in the filtrate.—The Anti-Scorbutic Properties of Concentrated Fruit Juices, Part IV., by A. Harden and R. Robison. By storing evaporated orange-juice at a temperature of 29° C. for 14 months 50 per cent. of its anti-scorbutic power was destroyed.—Studies on Gelatin, Part I.: The Dynamics of the Formation of Gelatin from Ossein, by A. B. Manning and S. B. Schryver.—The Formation of Vitamin A in Living Plant Tissues, by K. H. Coward and J. C. Drummond. Dried seeds in general contain but little vitamin A, and the amount does not increase during germination. The vitamin is synthesised in green leaves and chlorophyll-containing algæ, but not in etiolated seedlings and in plants devoid of chlorophyll. The active substance is not associated with proteins but is extracted with the fat.—Researches on Vitamin A. VII. Notes on the Factors Influencing the Value of Milk and Butter as Sources of Vitamin A, by J. C. Drummond, K. H. Coward, and A. F. Watson. The content of milk in vitamin A varies considerably as the result of variations in the diet of the cow. Colostrum is richer in the vitamin than milk, and milk is richer than the butter made from the milk. Processes in the manufacture of butter which involve exposure to air at high temperatures lead to destruction of the A factor. The vitamin is, however, not affected by storage unless oxidative changes take place. Production of free fatty acid does not destroy the vitamin if oxidation be prevented.—On the Theory of Gels, by S. C. Bradford.

BRITISH JOURNAL OF OPHTHALMOLOGY. October and November, 1921.—In the October number is a report of the lecture delivered to the Oxford Ophthalmological Congress last July by E. E. Maddox on Heterophoria.—S. Miyashita and Y. Nisyake, from the ophthalmic department of the Medical College of Osaka, contribute an article on a rare pathological condition—Retinal Degeneration with Multiple Aneurysms—of which only some 13 cases have been previously recorded.—A. S. Percival writes on Decentration and Oblique Cylinders.

In the November number the subject of Retinal Pulsation is discussed by Colonel R. H. Elliot in a paper of considerable interest. His explanation rests on the theory that the intra-ocular blood pressure varies directly with the amount of fluid in the eye, a theory contested by Thomson Henderson and others, who believe that the scleral envelope is not distensible, and that the amount of fluid in the eye is constant. According to Elliot the arterial pulse is seen whenever the intra-ocular pressure passes the pressure in the arteries during the period of diastole, but is lower than the latter during the systolic period. It is always of pathological significance but can be produced artificially by digital pressure. If, when an artificial pulse has been produced in this way the pressure of the finger is gradually increased, the pulsation ceases again as the intraocular pressure becomes greater than the systolic arterial pressure, but this experiment is justly criticised as being not without danger to the patient. The phenomenon of the venous pulse is of a totally different nature. It is physiological but only to be observed in a certain proportion of subjects, and the pulse is not nearly so marked as the arterial pulse when that exists. The cause of the venous pulse is that in the cardiac cycle the systolic arterial pressure coincides with the period of lowest pressure in the veins; assuming the time between the heart beats to be eight-tenths of a second, and that in the fifth tenth we have a maximum pressure within the veins owing to the auricular systole, in the seventh tenth the ventricular systole will cause a maximum pressure within the arteries at a moment when the venous pressure is at its minimum. Hence the pulse. Colonel Elliot goes on to discuss the varying effects of digital pressure on the venous pulse, its relation to glaucoma and kindred problems. He also contributes an article on the haloes of glaucoma.—An article by W. H. Simpson on Safety in Ophthalmic Operations gives the details of the precautions adopted at Moorfields (at which hospital he was senior house surgeon) before and during cataract operations.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 26, 1921.

Cancer Research.

THE seventh scientific report[1] of the Imperial Cancer Research Fund, which has just been published, contains seven papers, four of which are reprints while three appear now for the first time. Apart from their intrinsic value as positive contributions to our knowledge of cancer, these papers have a further interest as marking what are practically fresh lines of investigation in the experimental study of this disease. Modern cancer research may be said to date from the recognition of the fact that spontaneous tumours in animals can be successfully transplanted into other animals of the same species, and propagated indefinitely in successive generations. Previously it had only been possible to study sporadic tumours as they occurred in human beings or occasionally in animals, and histology was almost the only field for investigation; but with the advent of the transplantable tumour of the laboratory animal it became practicable to undertake purposeful investigations under properly controlled experimental conditions. At first, objections were raised to this experimental study of cancer on the grounds that tumours in animals were not true neoplasms and bore no real relationship to the malignant growths which occur in man. Much careful and laborious work was necessary, as may be seen from a glance at the first three or four reports of the Fund, before contemporary die-hards were convinced that cancer is ubiquitous in the animal kingdom. An echo of this dispute, at one time acute, is seen in the paper demonstrating lymphatic dissemination in spontaneous tumours of the mouse, which appears in the present report

Partly because the trend of scientific medicine was strongly towards the study of immunity, partly because of questions raised by some of the earliest experiments in transplantation, interest was focussed from the first on the natural and acquired resistance of animals to the inoculation of tumour tissue. This field has been thoroughly worked, almost exhausted, in fact, and a vast amount of information, much of it of real value to the student of human pathology, has been accumulated; nevertheless, the fundamental problems seem no nearer solution and it is clear that research must proceed in other directions. An important new method of investigation which is rich in promise has, indeed, been developed during the last few years. In 1915 two Japanese workers reported the production of cancer in the skin of rabbits in response to the application of tar. Similar results were obtained in mice by Japanese and Danish investigators, and there is no doubt that a method is now available of producing, with a considerable degree of certainty, malignant growths of epithelium under conditions which are ideal for purposes of observation and experiment. In the laboratories of the Imperial Cancer Research Fund the study of tar cancer in mice has been in progress for some 18 months, and in the current report the director publishes the results of his preliminary observations. 190 mice were painted on the back with coal tar once or twice a week, and of them 23 developed true cancer of the area painted. Inasmuch as the death-rate from intercurrent disease was considerable—the number of survivors was only about half after four months—and the first definitely malignant tumour developed only after about 17 weeks' tarring, the development of true cancer in 23 mice indicates a fairly high percentage of successful results. The malignancy of the tumours was established by their histology, by the fact that they continued to grow after the application of the tar was discontinued, and by successful autoplastic transplantation. This consists in the removal of a small fragment of the tumour and its inoculation into the subcutaneous tissues of the animal in some part well removed from the primary tumour. This method of autoplastic transplantation corresponds practically to an artificial metastasis, and successful autoplasts are by far the surest tests for malignancy; the test can be carried out long before local infiltration or spontaneous dissemination reveals the true nature of the growth, and it is valuable in differentiating tumours which, histologically, are indistinguishable from innocent forms. It has been demonstrated in these experiments that the malignant change occurs in small isolated groups of epithelial cells and not diffusely over the whole of the painted area. Further, some animals seem more susceptible to the tar than others, and develop tumours after a much shorter application. Thus, in this experiment the earliest carcinoma developed in the eighteenth week, and the latest only after 52 weeks' treatment; and it has also been noted that in the earlier tumours the histology closely approaches the normal, whereas in those developing later, loss of differentiation may be extreme.

Other papers in the report deal with investigations into the physiological processes of normal and malignant cells. These experiments are obviously of fundamental importance; it is too soon as yet to theorise on their application to neoplastic conditions, but this is without doubt a line of research from which much may be expected. Finally there is a long histological paper on the Golgi apparatus of transplantable tumour cells. This again amounts to a preliminary communication on a very laborious research, but it is the morphological counterpart to the physiological investigations to which we have referred. Structure and function are inseparable; the one must vary with the other, and it is by an extensive study of cellular physiology and morphology that we may best hope to discover those elusive properties of malignant cells which distinguish them from their innocent forbears. This is the first scientific report of the Imperial Cancer Research Fund published since 1912, if we except the sixth report, which dealt with the work of members of the staff and had more to do with war pathology than with cancer research. And it is encouraging to find the subject of all others in pathology which is regarded by the majority as almost insoluble being tackled with freshness of outlook and undiminished enthusiasm.

[1] Published by Taylor and Francis, Red Lion-court, London, E.C. Price 15s.

Moral Imbecility.

AT the first sessional meeting of the Oxford Medical Society Dr. J. M. MACPHAIL brought forward a case of moral imbecility in a stalwart-looking man who had served three and a half years in the army and showed little outward sign of defect, but in whom application of the point-scale method of examination was successful in demonstrating a level of intelligence below the normal standard. In his lecture to teachers, which we

print in full at the opening of this issue, Dr. W. A. POTTS, speaking from his experience as psychological expert to the Birmingham Justices, states that nearly all the so-called moral imbeciles he had examined were mentally defective. There is, he roundly asserts, no criminal type, and recent investigations have even thrown doubt on the inheritance of mental defect as such. He spoke of psychical as distinct from physical inheritance. A child may inherit the tendency to evade rather than face difficulties, and he placed the critical period in such a child's history very early indeed. Nearly all the young Birmingham delinquents were on the wrong path, he said, at ten years of age and even earlier. The alleged first offender is not, in Dr. POTTS's view, an innocent little person to be dismissed with a caution, but an individual on the wrong path whose case requires thorough expert examination.

We are unfortunately too ignorant at present to deal with many of these delinquents other than by punitive detention, but what is really most necessary now is an inquiry into their mental life. There will probably be no doubt in the minds of those who have experience of the class, that the case described in considerable detail by Dr. NORWOOD EAST in our last issue is truly a case of moral imbecility; indeed, in its features of persistent crime from an early age in spite of all refining and reforming influence and of repeated punishment, in the apparently complete absence of any sense of morality and social responsibility, and in the lack of wisdom to see the personal disadvantages resulting from such misconduct, it is a very characteristic case of this condition. With regard to the boy HAROLD JONES, who, on his own confession deliberately murdered two young girls in the most callous manner, we are, it is true, without any expert evidence as to his mental state, but this case also comes within the same category. The condition of moral imbecility is one of very great scientific interest, especially in regard to its psychology and ætiology. Sound authorities regard it as due to a definite defect of mind of such a nature that the sufferer is permanently incapable of controlling his conduct so as to conform to the legal and moral standards of society. Then there arises the interesting question of the cause of such defect. In many instances it is likely that this is the same as that of ordinary mental defect, the imperfection, however, being chiefly or entirely incident upon the inhibitory functions. But it is possible that some of these cases may stand upon a quite different footing, and that in them the defect may be analogous to the "sports" and "freaks" which occur in plants and animals, rather than due to a pathological condition of the germ plasm. However this may be, it is recognised that true moral imbecility is incurable, a thing which entails social consequences of such importance as completely to overshadow any academic considerations. Perhaps the fact which strikes us most forcibly is that serious, indeed alarming, danger to the general public must arise from the freedom of these persons, and in this connexion it is necessary to remember that neither HAROLD JONES, nor the persistent criminal, whose life Dr. EAST has sketched for us, are unique cases; they are merely representative of a not inconsiderable class. It is obvious that the public safety demands that the condition which makes such conduct possible should be diagnosed, and that persons suffering from it should be placed under suitable care at the earliest possible moment.

Diagnosis is a matter of great difficulty; there are several conditions closely resembling moral imbecility which are curable under appropriate treatment, and it is not impertinent to ask whether the practitioner invariably possesses the requisite knowledge of psychological medicine, and particularly of mental deficiency, to make such a diagnosis. We are of the opinion that he does not, and for this reason we welcome the increased facilities which are now being afforded in London and elsewhere for instruction in this subject. A further advance might be made. The subject of mental deficiency is one of such medical and social importance that the time has arrived when the establishment of university chairs might be considered. There seems to be a need for the mental examination not only of all young persons charged with serious crime, but also of all persons repeatedly coming before the courts. If adequate arrangements existed for such examinations, it should surely be possible to detect sufferers from moral and other forms of mental deficiency before they were able to commit an alarming series of crimes.

Pragmatism in Medicine.

ONE of the most significant features of the progress of medicine in recent years has been the enthusiasm with which laboratory methods have been brought into use in the investigation of sick people. That a large and expensive book like Prof. J. J. R. MACLEOD'S "Physiology and Biochemistry in Modern Medicine" should quickly reach its third edition indicates a definite change of attitude among our clinicians. The University of Sheffield now detaches members of its physiological staff to work and give instruction at the hospitals with which it is associated. And it has lately been announced that the Clinical Society of Manchester will no longer devote its meetings to the discussion of unusual and difficult cases, but that the demonstration of new methods of laboratory investigation and diagnosis will now form part of the regular programme.

That all this and other changes along similar lines which are everywhere taking place is for good no one can doubt. The time has quite gone by when it can be argued, as it used to be, that it is bad education to teach a student to use agglutination tests in the diagnosis of obscure fevers because they deprive him of the improving gymnastic of nicely balancing the variable signs which he can sometimes ascertain by methods of more respectable antiquity. No one believes that clinical sense can be replaced by laboratory manœuvres, but neither does anyone of sense any longer look askance at the help to diagnosis which emerges from research. It has been said that a scientific thesis may be taken to be "true" if it is productive of fresh knowledge. And on this pragmatical basis the proposition that the secrets of medicine will be revealed along the lines of present activities, so diverse and so keen, will receive general assent. But those who are more reflective than enthusiastic may feel some certainty that there are a good many problems in clinical medicine that have to be solved by clinical methods. The attractiveness of all new procedures is obvious and the desire to see good in them is natural. Just as experimental work in the laboratory is of its essence simpler and easier than any kind of clinical inquiry of equal seriousness, so clinical investigation of a laboratory kind is simpler than that to which methods of precision cannot be applied. This must necessarily be so, because the whole object of the experimental method is so arbitrarily to restrict and simplify the

complexities of the real world that they shall be capable of measurement and analysis. It mostly happens that the main difficulties of any problem have been passed when it has been defined and reduced to a form in which it can be subjected to experimental investigation.

Sir JAMES MACKENZIE tells us that many of the most pressing questions of practical medicine are of the nebulous kind of which the point is at present scarcely visible. No one can answer definitely questions which are not definite; but we can sift the questions and agree upon their meaning as a preliminary to attempting the reply. The natural history of disease is clearly a great field of inquiry at present hardly touched; Dr. W. H. HAMER never fails to remind the laboratory worker that there is something in epidemiology which is beyond and behind bacteriology. In our enthusiasm, therefore, for the facility with which quantitative answers can be obtained with a burette, do not let us forget that there is a good deal of difficult work which wants doing in which its help will be lacking. By a strange confusion of thought, "scientific" work in medicine is often used as synonymous with "laboratory" work. Scientific work is any work done with accuracy and discipline of mind, and this should be as commonly maintained by those who see the sick in their homes or in the wards of hospitals as by those whose careers lie in laboratories.

INFANT MORTALITY IN BOMBAY.

SOME of the attention concentrated on the small but regrettable loss of life which occurred in Bombay at the time of the PRINCE OF WALES'S visit last week might well be given to the appalling loss of infant life constantly occurring in that city. In the quarterly return issued by the Registrar-General the extraordinary infant mortality rate of 630 per 1000 births was recorded for the third quarter of the year, and for the second quarter the return was even worse—viz., 788 per 1000 births. It is only fair to add that the extremely high rates customarily returned by Bombay demand some correction in view of an explanation given by Dr. J. E. SANDILANDS in his annual report as executive health officer. It there appears that the low recorded birth-rate in Bombay, as compared with Madras, is due to the fact that a large number of children born of Bombay mothers are never registered at all or are registered elsewhere, many women going away for their confinement. The Madras recorded rates of 254 and 286 for the same quarters are terrible enough, but may well be near the truth. Calcutta makes no returns, possibly because they would be misleading. We are in great need of accurate figures from India.

TUBERCULOSIS SOCIETY.—The annual meeting will be held on Friday, Dec. 2nd, at 7.30 P.M., at the Caxton Restaurant, Tothill-street, Westminster, and will be followed by a supper in the restaurant. Members intending to be present are asked to forward remittance (4*s.* inclusive) as early as possible to the hon. secretary, Dr. F. J. C. Blackmore, at 39, Woodland-terrace, Old Charlton, London, S.E. 7. The programme for next session has just been issued. On Jan. 23rd the report of the subcommittee on classification of tuberculosis will be discussed; on Feb. 27th the subject of tuberculosis and X ray work will be considered; March 27th will be devoted to a clinical evening; on April 24th the therapeutics of tuberculosis will form the subject of discussion; and on May 22nd a general discussion on the relationship of dispensaries and other institutions for tuberculosis will take place. On June 26th there will be a provincial meeting, probably at Bristol. Meetings will be held at the Margaret-street Hospital, Margaret-street, Regent-street, London, W., at 7.30 P.M.

Annotations.

"Ne quid nimis."

HOSPITAL FINANCE OUTSIDE LONDON.

THE report on the financial position of 572 voluntary hospitals in England and Wales, excluding London, for the year 1920 follows hard upon the survey of London hospital finance reviewed in our columns last week. The author of this valuable report is director of Hospital Services to the Joint Red Cross Council, and Sir Arthur Stanley in his introduction does no more than justice to Sir Napier Burnett's work when he points out that the figures here set out make it possible for the first time to analyse with precision the sources from which voluntary hospitals derive their income. The annual expenditure per occupied bed averaged in 1920, it seems, £135, as against £107 in 1919. The report suggests that there is every indication of the high-water mark in hospital expenditure having been reached in 1920, and anticipates that the present year will show a considerable reduction in the cost of many hospital commodities. As in London, it is noteworthy that the larger hospitals with 100 or more beds, especially those with medical and nursing schools, are more expensive to run than the smaller hospitals; while the teaching and training of students manifestly exert a stimulating effect upon the standard of diagnosis and treatment, it appears that the actual work done by students does not save any hospital much money. Eleven hospitals replied to a question regarding the fees obtained from medical students: at eight hospitals no fees at all were received and at three others they amounted to an aggregate of £1400 odd. Sir Napier Burnett contrasts this laxity with five Scottish hospitals associated with medical schools at which in 1920 a sum of nearly £11,000 was realised from medical students' fees. The practice has been very different with pupil nurses. Provincial hospital finance differs in one important respect from London experience in obtaining a material source of income from workmen's contributions; these amounted in 1920 to 21 per cent. of the total ordinary income. Whenever a hospital cares to take the trouble, Sir Napier Burnett assures us, to organise this form of collection, it almost invariably meets with a rich reward. One provincial hospital actually received £114 per bed from this source, where another situated in an even more populous district derived but £2 per bed. Contributions from patients themselves produced 9·7 per cent. of the total ordinary income in 1920, exceeding by 2 the percentage of the preceding year; income from public services accounted for 14·4 per cent. of the total ordinary income, a drop of nearly 4 on the percentage of the previous year, simply due to the withdrawal of the War Office capitation grant. The report comments severely upon the paltry £39,000 received by provincial hospitals for services rendered to patients under the National Health Insurance Act. At one large hospital 26 per cent. of out-patients are insured persons making weekly insurance contributions, but this hospital receives no support whatever from insurance funds. Sir Napier Burnett foresees much larger contribution from approved societies to hospitals for services rendered to insured persons. We welcome this report at the present moment for it will be of special value to the County Voluntary Hospital Committees which are just being established. To them it commends the gathering together of provincial voluntary hospitals into federated groups with the object of working out some uniform financial scheme, of establishing some system of coördinated treatment, and of effecting some reduction of expenditure along the lines of coöperative buying. The situation is not desperate for these reasonable remedies have never been tried, while the total moneys received by provincial voluntary hospitals during 1920 actually exceeded the total expenditure by over one million

pounds. The fact implies a very generous measure of confidence in the voluntary hospital system on the part of the public of this country, and this confidence it will be the special concern of the County Committees to foster by judicious spending.

MALARIAL PREVALENCE IN TEMPERATE CLIMATES.

THE effect of meteorological conditions on the incidence and distribution of malaria was hard to interpret before the discovery of an intermediate host. Writing in 1889 on the Geographical Distribution of Some Tropical Diseases, Dr. R. W. Felkin remarked that the malarial poison was ponderable and was disseminated by wind and water with a special relation to mean annual temperature. The relation to subsoil water and the amount of organic matter in the soil were noted as unexplained. Much of the difficulty has been cleared up by a study of the natural history of the mosquito, but discrepancies remain.

Malaria is more frequent in Bulgaria since the war, because of the 400,000 infected soldiers who came home uncured after their malarial attacks, still carrying gametes in their blood. A severe epidemic was expected in 1919 to follow their return, but, on the contrary, the cases were unusually few; 1920, however, was the worst year for 20 years. In the spring of 1919, the Bulgarian Government, anticipating a large increase of cases, set up a malaria prevention inspectorate, on the work of which Dr. S. Konsuloff reports in a recent paper.[1] In the different districts of Bulgaria the prevalence of malaria in any year varies with the meteorology of the seasons, through their influence on the breeding of anophelidæ. In the plains the most numerous mosquito is *A. maculipennis;* in the N.E. and in the rice-fields *A. pseudopictus;* in the S.W. in the hills, *A. superpictus*, very plentiful around the Struma valley, especially in ravines and small streams, in small pools full of algæ, and in pools, however shallow, amongst the pebbles on either side of the streams, but it is not found in the muddy-bottomed pools of the plains; these maculipennis chiefly affects, though it is also found in the gravelly pools with superpictus, which, however, requires only very small pools to breed in. Superpictus does not shun houses altogether, neither does it crowd into them like maculipennis. Superpictus carries malaria to almost waterless villages to which all water has to be carried, as it can breed in the tiniest puddles left in ravines and broken ground; so in Crete, and in Greece too, the most malarious districts are not those with obvious marshes. It will be seen from the Bulgarian work, here summarised, that the personal details of the mosquito's life are a determining factor in the vagaries of malarial prevalence. The annual course of mosquito development begins about April when the females which have hibernated commence to lay their eggs. As the temperature is low these develop slowly (not at all below 53° F., only slowly up to 60° F.) and the mosquitoes of the first brood appear in the end of May or the beginning of June. Twenty days thereafter the new females begin to lay, and the second brood appears in July, the third arrives from the middle of August to the middle of September; there may be a fourth but the temperature is by this time too low to permit the development of the malarial parasite. The third brood often fails because the streams in July have dried up and there is no water for the larvæ—this, of course, does not apply to the rice-fields, where the water level is artificially maintained. It can now be explained why there was so little malaria in 1919. That spring was exceptionally cold, development was consequently slow; the females, when they did come out, were too chilled to begin feeding at once, so their eggs were laid, not in April but in June. Thus one brood was lost. The next brood was developing through the summer, which in this year was unusually hot, and the drought, drying up the pools, destroyed it. Everyone in Bulgaria noticed in 1919 how few mosquitoes there were and how few cases of malaria. Rain-storms affect superpictus in the higher ground. As there are no forests, the rains at once flood the ravines, wash the larvæ out of their small pools and destroy them, and if these spates are repeated within a month the next developing brood is wiped out. That is what happened in 1919. On April 25th came rain, so heavy that a bridge in the Struma valley was washed away, and another rain-storm followed on May 7th. Therefore in the superpictus area, too, there was little malaria that year.

As we now understand better, in the light of these observations, the natural history of the mosquito, it may be in some degree possible another time to forecast in June the extent of the epidemic that will come in the following summer. A cold spring delays development of all mosquitoes and lessens malaria. Heavy rains in spring decrease superpictus, but rains in summer increase maculipennis, decreasing, respectively, and increasing malaria in their districts. These observations confirm those of Dr. C. M. Wenyon for Salonika, recorded in THE LANCET of Oct. 1st (p. 710).

[1] Arch. f. Schiffs- u. Tropen-Hygiene, xxv., 227.

AVIRULENT TUBERCLE BACILLI.

THE variation in virulence of tubercle bacilli under changing environment is of the utmost practical importance. In the *Annales de l'Institut Pasteur* for September, Calmette, Boquet, and Nègre give an account of experiments conducted with bovine bacilli grown for a long period upon potato in the presence of ox bile. This medium produces a modification in the virulence of the bacilli, which in other respects remain unchanged. The loss of virulence seems somewhat selective, and it is rather surprising to find that it is most marked in the case of the guinea-pig, an animal which is normally extremely susceptible. The bacilli still retain the power of provoking sharp reactions, and of producing typical tuberculous lesions in the rabbit when inoculated in sufficiently large doses. The guinea-pig appears able to resist very large doses of these bacilli, whatever may be the route by which they are given. A local inflammatory lesion is produced by the larger doses, which may break down and become evacuated; subsequently, healing takes place and no generalised tuberculosis is produced. When introduced intravascularly, or into the alimentary tract, after a latent period of some 20 days general symptoms appear, with swelling of the lymphatic glands; but the illness is recovered from. When the animals are killed during the acute period of this illness—and this was the case in many experiments—the bacilli are found in various organs without the characteristic lesions of tuberculosis, phagocytosis of the organisms by large mononuclear cells instead being a prominent feature. The injection of the modified bacilli into an animal suffering from spontaneous chronic tuberculosis resulted in a reaction akin to that produced by tuberculin, but developing more slowly and persisting for a greater length of time.

Attempts were made to protect guinea-pigs from virulent bovine bacilli by inoculation with the modified strain. Where such immunising injections were given subcutaneously no apparent protection was conferred, but where a single dose of the modified organisms was injected intracardially, and infection with a virulent strain attempted a month later, the results were of considerable interest. Whereas control animals succumbed regularly, with large caseous glands and generalised tuberculosis, the immunised animals, at the end of three months and a half, were alive and apparently in good health. When killed and examined no generalised disease was found, but the glands in the region of the path of infection were found to be enlarged and, on section, showed a thickened capsule with a clear, serous, fluid content, containing but few leucocytes and only occasional bacilli. The authors are guarded about the interpretation of these results, which are too recent to be anything but provisional,

and they content themselves with the conclusion that "the tuberculous infection pursues quite a different course in guinea-pigs which have received an intracardiac immunising injection of bile-cultivated bacilli than it does in the controls." Amongst other interesting points in this valuable paper is the fact that the bacilli were found in apparently healthy lymphatic glands, in the dog, three months after the last injection.

THE SCHOOL OF TROPICAL MEDICINE AND HYGIENE IN CALCUTTA.

WE are informed that a few days ago, by permission of the Government of Bengal, the first course of instruction in the Calcutta School of Tropical Medicine was begun, whilst the Carmichael Hospital is now on the point of being opened, if not actually open. The provisional prospectus of the Schools of Tropical Medicine and Hygiene and the syllabus of their respective diplomas were recently issued, together with a note on the present position with regard to these institutions, including a statement of the financial support already received and of that for which the Government of Bengal is urged to make itself responsible. A brief outline of the origin of the Calcutta school was traced in these columns nearly a year ago[1]; reference was then made to the unlimited opportunities for teaching and research provided by the position and surroundings of the schools. It is hoped to organise research largely on the lines of the Rockefeller Institute in New York; the work of the schools and hospital will be chiefly directed towards solving the special problems of Bengal and the neighbouring provinces, and will aim at making the province self-supporting in the supply of highly-trained doctors and sanitarians and in the provision of medicines suitable for the treatment of diseases prevalent in Bengal. Indeed, the research side of the institute has been open for a year under the governing body of medical men, who control the endowment fund, subscribed by the public, with an income of over a lakh of rupees a year; and good work has already been recorded on kala-azar and leprosy. The Pathological Museum is in size unique among tropical museums; at the Tropical School training will be given for post-graduate instructors who will meet a great need in the province, and here special attention will be paid to the uses of indigenous drugs; at the School of Hygiene there will be held the first organised higher courses of hygiene instruction in India; and the Carmichael Hospital, regarded merely as a charitable institution, will amply justify the entire expenditure connected with it—all these institutions have been built and equipped from funds raised by Sir Leonard Rogers, whose knowledge of Indian diseases is unrivalled in breadth. As component departments of the general scheme their organisation is inter-related in a manner calculated to be not only of the utmost value in itself, but also a model for other countries to imitate; what is asked of the Government of Bengal is the annual contribution of Rs.3,92,000, a sum small in comparison with the benefits which will accrue to the province. The large sums contributed by the Governments of India and Bengal, by great commercial houses, and leading private individuals, both European and Indian, form proof of widespread confidence in the business organisation of the undertaking; but the tone of the note suggests that whilst refusal of the Bengal Government to accept the final responsibility for the upkeep is described as "incredible," such refusal may occur. The province has, it is pointed out, "the opportunity of taking up and developing a unique property, which is the envy and admiration of the whole civilised world." It must be hoped that the province will not let that opportunity go by. Its Government will, in any case, have to provide post-graduate instruction for the doctors and training in hygiene for the sanitary officers, of the province. A new scheme for these purposes would cost much more than the amount needed to finance the existing scheme. Specially interesting is a reference, in the portion of the note dealing with the School of Hygiene, to a suggestion of the director of the school, concerning the training of special instructors in personal hygiene; these would later be attached to the education department, in which their duties would consist of holding courses of instruction in the rudiments of personal and domestic hygiene for the schoolmasters of Bengal. The latter would then convey their knowledge to the children who attend their schools, and in that way the principles of sanitary reform would gradually permeate the population. It has been found almost hopeless to instruct adults whose ideas are fixed, and in the manner described above the Calcutta school would before long become surrounded by an atmosphere of increasingly intelligent public opinion which could not but further the usefulness of its work.

[1] THE LANCET, 1920, ii., 1268.

HOWARD MARSH.

THIS memoir[1] of Prof. Howard Marsh is an unassuming account, written with a simple charm, of a man who was alike unassuming and charming. Marsh's memory will be kept green without the aid of memoirs among a large series of patients, pupils, and friends, but it is well that there should exist a written record wherein those who did not know the man may read of a life devoted to work and duty and lived in all single-heartedness. Marsh came of stock which has produced many men eminent in various walks of life, for he was descended from East Anglian farmers. He received his early education at the Grammar School of Eye at a date when the local grammar schools of this country had far greater chances than they now possess of turning out exceptional men. His mind was turned towards medicine by his association with Dr. Miller of Eye, one of the old school of country medical men, whom he used to accompany on his rounds, and after serving an apprenticeship with his uncle, John Marsh of Clerkenwell, he entered St. Bartholomew's Hospital in 1858. He was house surgeon to Mr. Skey and afterwards house surgeon to the then comparatively new Hospital for Sick Children in Great Ormond-street. This institution made a new and valuable departure in 1863, and one which played a great part in determining the direction of some of Marsh's best work. For an after-cure department was started in 1863, under which children with chronic joint diseases were visited at their own homes after leaving the hospital by those who were competent to see that the treatment was continued systematically. At this hospital and at its daughter hospital, the Alexandra Hospital for Children with Hip Disease, Marsh laid the foundations of that knowledge of diseases of the joints which was so marked a feature of his professional life. In 1873 he was elected assistant surgeon to St. Bartholomew's Hospital, but not until 18 years later—namely, in 1891—owing to the extraordinary delays in promotion at the institution at that particular time, was he appointed full surgeon with a right to beds. Until that time he was dependent for any beds under his charge to the courtesy of his colleagues. Marsh, however, was always a remarkably young man for his years, and not only did he discharge his duties as full surgeon for 12 years with zeal and success, but on resigning this post in 1903 in the same year he was appointed Regius Professor of Surgery at the University of Cambridge. This compliment to one whose only previous connexion with the University had been as an extern examiner was still further signalised when, in 1907, on the resignation of Dr. Alexander Hill, Marsh was elected Master of Downing College. As a professor, as head of a house, and as Vice-Chancellor, Marsh profited by that faculty with which he was eminently endowed—namely, the art of getting on with people; he possessed it without

[1] A Memoir of Howard Marsh, F.R.C.S., D.Sc., M.A. London: John Murray. 1921. Pp. 86. 5s.

the sort of universal compliance which aims at popularity and, as a rule, misses it. It could have been no easy matter for a man of advancing middle age to enter into the ways of life and modes of thinking of a University to which he was himself a stranger, particularly when that University and its colleges possessed over 600 years of tradition. Marsh managed admirably. His birth made him a persona grata with the College tenants, especially as most of the property of Downing College is agricultural and lies in East Anglia. His familiarity with men and manners, acquired in the conduct of a first-class London practice, made him an acquisition in the social circles of the University. And his skill at his own métier was beyond question. Among his other duties he took a deep interest in the Boy Scout movement, being the first Commissioner of Scouts in Cambridge, and on the outbreak of war he threw himself vigorously into all the University movements to help his sorely tried country. He died from a heart attack at the age of 76, leaving behind him the memory of a man who always did his best; and he would have desired no more fulsome epitaph.

PSEUDOXANTHOMA ELASTICUM.

ACCORDING to Dr. Binford Throne and Dr. Herman Goodman,[1] of the New York Skin and Cancer Hospital, who record an illustrative case with a histological report by Dr. D. S. D. Jessup, pseudoxanthoma elasticum, sometimes known as elastoma or nævus elasticus, is one of the rarest dermatoses known, only 15 other examples having been published. The condition was first described by Balzer in 1884, but it was not until 1896 that the name of pseudoxanthoma elasticum was given it by Darier. The ætiology is unknown. It has been variously regarded as a nævus, a form of tumour, and, from association with tuberculosis, as dependent on that disease for its causation. It appears in youthful persons and in adults of both sexes, and more than one member of the family may be affected. Its clinical features are yellowish small papules, individual and confluent or massed into plaques. The skin changes are usually symmetrical, the areas of predilection being the neck and axillæ. The site of the lesions is marked by exaggeration of the normal creases and reduplication of the normal folds. A case, communicated to us, was that of a woman, aged 39, who had had the eruption since the age of 4 years. One of her sisters had also had a similar condition since she was 4 years old and had died of pulmonary tuberculosis at the age of 31. The patient had had a lymph-node incised when she was 18 months old and at the present time showed enlarged mediastinal glands on X ray examination. The clinical diagnosis was confirmed by X ray examination, which showed characteristic clumps of swollen and degenerated elastic fibres with basic degeneration of the collagen fibres in the lower and middle derma. There was little change in the epidermis and pars papillaris of the derma, and there was no involvement of the sweat and sebaceous glands or hair follicles.

MAN-POWER.

THE Man-Power of Australia: its Dependence upon Education, Immigration, and Public Health, was the subject of an address delivered during August to the Millions Club of New South Wales, at Sydney, by Lieut.-Colonel Sir James Barrett, who took as his text the necessity of filling the Australian continent with inhabitants healthy, educated, and highly organised. Recalling his experiences during the war, Sir James Barrett pointed out that the occupation of the army medical officer was one-third treatment of disease, one-third the placing of the partially disabled in suitable occupations, and one-third prevention of disease. There might be established in civil life an analogous system of hospitals for acute cases, convalescent hospitals, and agencies for placing the partially disabled in occupations in which they can still pull their weight. Nothing had been more striking than the care taken in the Imperial army to have men examined by the most eminent British specialists to determine their fitness to fight, and it had occurred to thoughtful men to inquire why the rank and file were not similarly classified for civilian occupations in time of peace. A little more sympathy was required for the disabilities of those at the bottom of the ladder. The organisation and use of expert knowledge were needed for town-planning and provision of playgrounds, and for all the larger aspect of health and hospital problems; and on the mental side it was now recognised that the period from 14 to 18 years was the most important from an educational point of view. Half-time compulsory education was found to be valuable in Japan, France, and England; Australia might find it well to adopt a similar system of civic education with a back-bone of trade interest. Concepts of mental development were altering; in Canada and the U.S.A. forms of manual training were now regarded as an essential part of university education. But even when all the physical and mental wants of a people were attended to, the result might still be a race of healthy, clever scoundrels. Morality was necessary, and since morality was taught more by example than by lessons, every parent should bear continually in mind the motto *Noblesse oblige*. Crude and unformed ideals must be stimulated to develop clear aims in life. The speaker described himself as meeting professional men who said they would have nothing to do with politics or public affairs; to him such men had lost their souls. In a phrase attributed to Huxley: "Every man or woman should be a master in some one department of knowledge, but they should be interested in everything else that takes place in this interesting world."

[1] Archives of Dermatology and Syphilology, October, 1921.

THE CEREBRO-SPINAL FLUID IN CONGENITAL SYPHILIS.

Dr. Otto Tenzer,[1] of the Carolina Children's Hospital in Vienna, remarks that in contrast with the numerous studies of the kind relating to the acquired disease, the literature on the condition of the cerebro-spinal fluid in congenital syphilis is comparatively scanty, while the results obtained by various observers are conflicting. His own investigations comprised the study of four reactions—namely, the Wassermann reaction in the blood serum, the Wassermann reaction in the spinal fluid, cerebro-spinal lymphocytosis, and the Nonne-Apelt reaction. In a few instances Pandy's reaction was also performed. It was a remarkable fact that whereas in adults lumbar puncture not infrequently causes symptoms of meningeal irritation in spite of confinement to bed, the only symptoms observed by Dr. Tenzer among 62 lumbar punctures performed were temporary apnœa in an infant and headache and vomiting in an older child. The results of the examination of the cerebro-spinal fluid in 43 cases were as follows: All the reactions were positive in 41·8 per cent., the Wassermann reaction was positive in 32·5 per cent., and lymphocytosis and a positive Wassermann reaction were found in 13·9 per cent. Sixteen of the total number were infants, among whom all the reactions were positive in 62·5 per cent., the Wassermann reaction was positive in 50 per cent., and a positive Nonne reaction and lymphocytosis were found in 31·3 per cent. With one exception, in which the spinal fluid showed lymphocytosis and a positive Wassermann reaction, all the infants presented a well-marked syphilitic eruption. Twenty were older children without nervous symptoms, in whom all the reactions were positive in 15 per cent. and a positive Nonne reaction and lymphocytosis were found in 5 per cent., and seven were older children with nervous symptoms, in whom the Wassermann reaction was positive in 70·1 per cent. and lymphocytosis was found in 20 per cent. Pandy's reaction in the few cases in which it was performed

[1] Monatsschrift für Kinderheilkunde, October, 1921.

corresponded with Nonne's reaction, but the other reactions did not show a similar parallelism. Dr. Tenzer's observations prove that a positive Wassermann reaction in the cerebro-spinal fluid is much commoner in congenital syphilis than in the acquired disease, and is indeed often the only change to be found. On the other hand, although the cerebro-spinal fluid was affected in a comparatively high percentage of cases, the changes rapidly disappeared, and could not be regarded as indications of a permanent damage to the central nervous system.

LOCAL ANÆSTHESIA IN STOMATOLOGY.

THE reliance of continental surgeons upon local anæsthesia is in remarkable contrast with the practice of this country. Dr. Hewer Aboulker, laryngologist at the Mustapha Hospital in Algiers, has recently made the claim[1] that local anæsthesia is applicable in the severest operations for cancer of the tongue and pharynx, and that by its use he has been able to reduce materially the death-rate in his own practice. After experiencing an operative death-rate of 55 per cent. in 18 operations for bucco-pharyngeal cancer carried out under chloroform, he has not had a single operative death among 10 subsequent operations under local anæsthesia. It would be rare in this country to find so high an operative death-rate under chloroform, yet it is worth noting what may be accomplished without a general anæsthetic in cases where this may be contra-indicated. We are informed that in the whole city of Geneva there is but one apparatus for administering nitrous oxide, and that is kept at the university clinic purely for demonstration purposes. That nitrous-oxide anæsthesia is the method of choice in this country for dental extractions is indicated by the fact that in large towns, where skilled anæsthetists are available, so many operations appear to be carried out under its influence. Dr. B. H. Haines,[2] writing in a country where local anæsthesia is much used, seeks an explanation for the better results he has obtained under nitrous-oxide anæsthesia, and finds it in the freedom from the more or less violent reaction or exacerbation of systemic symptoms which commonly follows a local anæsthetic. He does not believe that the small amount of local anæsthetic used has enough toxicity to account for these symptoms, which he has noted as routine phenomena, but attributes them to the lowered local resistance dependent on temporary interference with the circulation of the blood. Whether this is or is not the correct explanation, the fact remains that patients who take gas well usually find that the painful fugue developing from a vague uneasiness through an ache to an agony ends more abruptly when the extraction has taken place under nitrous oxide than under local anæsthesia.

BLOOD-DONORS.

IN a recent number of the *Guy's Hospital Gazette* the editor protests against the too free use of students as blood-donors. He implies that they have been encouraged to act as donors, and it is greatly to their credit that they have so readily acceded to requests for blood. Later the editor of the *St. Bartholomew's Hospital Gazette* associated himself with this protest, pointing out that the medical student is a hard-worked person, little able to part with a pint and a half of blood. It may take three weeks for a normal individual to make good even the loss of a pint, and it is clear that students should not be expected, through sheer altruism, to work at a disadvantage for so long a time as this. We should regard it as perhaps justifiable to have at hand a few volunteers among the students, carefully chosen for their physical fitness, and to reserve them for cases of extreme urgency, but the principle should not be extended beyond this. The hospital journals raise a question as to the best procedure in institutions which may have to deal at any moment with cases of severe hæmorrhage. It is clear that, if students may not be used as donors, still less may the permanent staff of a hospital be expected to serve. None of them can be spared from their duties even for a day without detriment to the hospital.

In the United States of America, where blood transfusion is more frequently practised than in this country, there has arisen a class of "professional donors." It is unlikely that anyone can make a living out of this occupation alone, as the frequency with which the healthiest man can afford to lose blood is limited to three or four times a year. Nevertheless, these professionals have thought it necessary to their interests to form a "trade-union," so that their blood may command as high a price as possible. Matters have not yet reached this pass in London, though a beginning has been made by the insertion of advertisements for blood-donors in the newspapers, and unemployed workmen have been obtained for a modest sum from the Labour Exchanges. At the present time, however, few hospitals are able to offer adequate payment to blood-donors, and in any case a system of professionals living at a distance from the hospital would not solve the problem of how to proceed in a case of great urgency. At the present time a relative of the patient is used in some instances, or a volunteer is found among the younger patients admitted for minor surgical ailment. Probably it is in the more systematic use of this kind of donor that the best solution of the difficulty is to be found. If the house surgeon responsible for dealing with the emergencies were to make a point of always knowing of at least one suitable donor among the patients, their blood could be obtained with the minimum of delay. For the less urgent cases a relative or friend belonging to the right blood group could usually be found. Some hospitals no doubt already have a system of this sort in operation, but where it is found necessary to protest against the too frequent use of students as donors it seems probable that better organisation is needed.

POST-GRADUATE EDUCATION FOR LONDON.

A MEETING was held at the House of the Royal Society of Medicine on Friday, Nov. 18th, at which representatives of the British Medical Association discussed with the Fellowship of Medicine the future of post-graduate education in London. The conference was presided over by Sir George Makins, chairman of the Executive Committee of the Fellowship. It will be remembered that the Post-Graduate Medical Committee of the Ministry of Health, under the chairmanship of Lord Athlone, presented a report earlier in the year recommending that certain steps should be taken to organise post-graduate education in London. The recommendations included attachment of a post-graduate medical school to a centrally situated London hospital, the establishment of a central office to develop educational work, and the granting of substantial financial assistance from the Treasury. Since this report was issued the idea of a central hospital devoted to post-graduate work has been abandoned for the present, the large expenditure being inhibitory. But as all our readers know, the Fellowship of Medicine has been for a long time carrying out post-graduate work in London, and the purpose of the meeting was to see how far this work could be developed along the lines of the recommendations of the Athlone Committee, and to what extent and in what places the assistance of the British Medical Association might be expected in future developments. At the meeting, which was entirely informal, Mr. Herbert Paterson, speaking for the Fellowship of Medicine, pointed out that a scheme had already been organised for a six weeks' post-graduate course, to be held early next year, continuous and occupying the whole of each day. Whilst it was admitted that such a course would

[1] La Presse Médicale, Oct. 26th.
[2] National Anæsthesia Research Society, Bulletin No. 16, Nov. 15th, 1921, p. 4.

be of extreme value for medical men from overseas and for officers in the Services enjoying study leave, it was held by some that it would not serve the needs of country practitioners. But others at the conference considered that the country practitioners most likely to make use of such post-graduate training would be the ones who could arrange for a prolonged stay away from their practices, while it was a unanimous feeling that a central organisation was necessary with a medical executive officer at its head. A source of income must be obtained, and the movement must be set on a business footing, so that those desirous of post-graduate tuition would be able to get the best advice, and teachers willing to assist should receive some regular remuneration. On these points the meeting was unanimous, and it was resolved to hold another meeting in the near future; this will not be, however, until the Post-Graduate Courses Committee of the B.M.A. have reported to the Council of the Association in February next.

GRATEFUL RECOGNITION.

HOWEVER bravely deformity and disablement has been borne by the sufferers in the war, it rarely has led, in this country at least, to any vocal expression of gratitude to those who spent many of their best years in relieving them. The following testimony from Canada is therefore doubly welcome:—

Whereas we, the amputation cases of the Great War, assembled in Convention at Toronto, this 29th day of September, 1921, on this memorable occasion do earnestly desire to express our gratitude and thanks to the various Medical Services we have come in contact with, for their skill and perseverance shown for our good,

And Whereas we do earnestly desire to express our humble appreciation to the Nursing Sisters who have so heroically befriended us in time of need,

And Whereas we do earnestly desire to express our deepest and sincerest regard to the Red Cross, Y.M.C.A., and all other organisations who laboured so much for our Comrades of the Great War and us,

So Be It Resolved at this First Dominion Gathering of Amputation Cases of the Great War, to again re-affirm our faith in Canada and the Empire as we were privileged to do in the hour of test that we may take our place in the line of Canada's forward march of to-morrow as citizens and useful men.

The resolution was carried unanimously, and the spirit which prompted its proposal is well displayed in its bold pathetic words.

WE deeply regret to announce the death of Sir Sydney Beauchamp in London, on Nov. 22nd, as the result of a street accident.

Sir Edward Marriott Cooke, K.B.E., M.B., who has recently retired from the Board of Control, has been appointed an unpaid Commissioner of the Board of Control for Lunacy and Mental Deficiency.

Colonel George Sampson Elliston, C.B., M.R.C.S., who died at Felixstowe on Nov. 20th, was for many years medical officer of health for the Borough and Port of Ipswich, and was well known in the Eastern counties as a pioneer of ambulance and volunteer training.

THE first meeting of the Dental Board of the United Kingdom will be held at 44, Hallam-street, London, W., on Wednesday, Dec. 7th, at 2 P.M., when the Right Hon. Francis Dyke Acland, M.P., will take the chair. The Board will continue to sit until the termination of its business.

AT the Royal Society of Medicine on Nov. 28th, at 5 P.M., an Occasional Lecture will be delivered by Dr. Guelpa, of Paris, on the Treatment of Diabetes and Gout by Disintoxication. The lecture will be open to Fellows and visitors. On Dec. 7th Sir Berkeley Moynihan will deliver, at 9 P.M., a short illustrated address on Medicine and Art.

Public Health Services.

WILLESDEN MUNICIPAL HEALTH SERVICE: A LOCAL DISCUSSION.

THE question of the municipal health service and its encroachment on private practice, in the area of the Willesden Urban District Council, has for some time past come under the notice of the Willesden branch of the British Medical Association. The scheme, which has received a large measure of public support and is rapidly extending, is criticised by the local medical practitioner on the following grounds:—

1. The health service is now largely devoted to remedial and curative measures at the local clinics, to the prejudice of the work of preventive medicine proper to a public health department.

2. By the establishment of this service, which until recently has been free to all mothers and children of school age without question as to their ability to pay for advice and treatment, the council's health authority has been competing on unjust terms with the local practitioner. The position has not been materially improved by the scale of charges (here reproduced) which came into force on Oct. 1st.

WILLESDEN U.D.C. HEALTH DEPARTMENT.

MEDICAL SERVICES—SCALE OF CHARGES.

Ordinary Benefits.

On payment at the Municipal Clinics of a registration fee of 2*s.* 6*d.* per person, the following ordinary benefits will be available for one year from the date on which the registration fee is paid:—

Out-patient medical and dental care, supervision and treatment of mothers and children under 5 years of age resident in Willesden, and children attending Willesden public elementary schools, including the benefit of the following:—

(*a*) Mothers' clinics; Baby clinics; Minor ailment clinics; Throat, nose and ear clinics; Eye clinics; Ringworm clinics; Dental clinics.
(*b*) Specialist consultations.
(*c*) Prescriptions.
(*d*) Home nursing.

Additional Benefits.

Additional benefits are available at the following scale of charges:—

Provision of artificial teeth	Cost price.
,, surgical instruments	Cost price.
,, spectacles	2*s.* 6*d.*
Repairs to spectacles	1*s.* 0*d.*
In-patient treatment at the Municipal Hospital as follows:—	
Confinement cases	£2 (inclusive fee).
Operative treatment of tonsils and adenoids	7*s.* 6*d.* ,,
Diseases of women	3*s.* 0*d.* per day.
Diseases of children up to school-leaving age	1*s.* 6*d.* ,,

General Conditions.

The council will consider the remission of the above charges (excepting repairs to spectacles, 1*s.* 0*d.*; and the registration fee, 2*s.* 6*d.*) in cases whose circumstances are below the council's scale. The council reserve to themselves the right to refuse treatment where accommodation or equipment is not available.

3. The local practitioner has not been consulted in the establishment of this service, nor asked to coöperate in the work, which is carried on by full-time medical officers, under the direction of the medical officer of health.

At a full meeting of the Willesden division of the B.M.A., held at St. Andrew's Parish Hall, Willesden High-road, on Nov. 15th, the recent activities of the council's health department were condemned both on the ground of abstract justice and of expediency from the public service point of view, and debate centred on the method of procedure to be adopted. It had originally been intended to receive a deputation of the local Ratepayers' Union, and to hand them copies of resolutions, but this plan was abandoned owing to representations from the Society of Medical Officers of Health. After full discussion, it was decided not to receive a deputation from a lay body at a medical meeting, but to send to the council, to the three local Ratepayers' Unions, and to the press copies of a memorandum drawn up by a special committee, and of a number of resolutions passed at the meeting itself. These documents may be summarised as follows:—

General Criticism of Council's Health Policy.

The principle underlying municipal health policy in Willesden appears to be to concentrate in the hands of the whole-time permanent officers of the

municipality the care (including treatment) of the child from before birth to school-leaving age, the services of these officers being placed at the disposal of all comers, and not only of the necessitous poor. This policy is opposed to the public interest, immediately because it involves unnecessary expenditure, ultimately because it must result in the formation of a class of practitioners wholly concerned in the treatment of disease in expectant mothers and in children, and the withdrawal of practice among such patients from the general practitioner.

Examination of the development of the system at the present time shows that the municipal service in Willesden is undertaking a work which, to a large extent, might be adequately provided for through other agencies. The service, thus overburdened, fails to carry out adequately its own peculiar functions. In other words, the present arrangements tend to neglect the preventive aspect of health work for the curative. This is extravagant because:

(1) Failure in prevention means an increase in avoidable sickness and disablement;

(2) The curative work can under present conditions be better undertaken by private practitioners;

(3) Persons able to pay for medical treatment are encouraged to obtain such treatment at the public expense through the public service;

(4) Owing to the excessive burden laid on the staff of the health service the work actually done cannot be adequately performed.

Here followed a series of notes illustrating the application of these general criticisms to the work of the several departments—viz., municipal hospitals, maternity and child welfare centres, and the treatment of school children.

Resolutions Passed at the Meeting.

1. That treatment at M. and C.W. centres should be confined to necessitous cases and in the case of school children to those cases where the parent fails to provide treatment recommended by the school medical officer or private practitioner.

2. That the Dunfermline scheme should be adopted in Willesden to ensure (*a*) that each child requiring treatment will in the first instance be sent to the family doctor, and (*b*) that the family doctor should have the right to refer cases to the clinics.

3. That part-time practitioners should be employed at the clinics as far as may be practicable.

4. That it is undesirable for wards in infectious diseases hospitals to be used for the treatment of non-infectious diseases and for maternity cases.

5. The division endorses the opinion of the Ministry of Health that the Willesden Hospital should not be used for non-infectious cases until the needs of infectious cases are dealt with. Further, that the hospital should not be used for non-infectious cases at all, as there is no accommodation for mixed or doubtful cases even in normal times.

6. The division protests against the leaflet entitled Scale of Charges because this is practically a municipal service and as such directly opposed to the policy of the B.M.A.

7. The division calls the attention of the Willesden ratepayers to the health policy of their council, which threatens to destroy the freedom not only of the medical profession but of every individual in the community, and urges the ratepayers strenuously to oppose at the next municipal election those who are responsible for a policy which the medical profession of Willesden considers to be a serious and increasing menace to the public health.

NATIONAL PROVIDENT SCHEME.

A MEETING of the Marylebone division of the British Medical Association, held at 11, Chandos-street, W., on Nov. 16th, was given up to a discussion of the National Provident Scheme. Mr. W. McAdam Eccles moved a resolution:—

That this meeting approves of the National Provident Scheme for hospital and additional medical services.

He said that the financial position of the voluntary hospitals in London was serious. In the past annual deficits to the amount of half a million had been largely made up by extraordinary grants from King Edward's Hospital Fund and the National Relief Fund, which would no longer be repeated. Some scheme for finding new money was therefore essential. The Cave Committee suggested three sources: (1) mass contributions from wage-earners; (2) a scheme resembling the Oxford scheme; (3) the Sussex scheme modified for London.

It was the third scheme which they were now considering. This scheme provides hospital treatment, consultations, nursing, specified dental treatment, X rays, electrical treatment, massage, laboratory investigations, and ambulance service. The advantage to the patient was that provision was made during health and that no payment was necessary for hospital maintenance during sickness. To the hospital it meant the maintenance of the voluntary system with an adequate income and no necessity of making appeals, which sometimes cost more than they produced. The general practitioner would benefit by having all the advantages of the scheme for his patient at his discretion. The staff of the hospitals were to receive 25 per cent. of the money received, and in addition, a fund was to be established from which fees for consultations at the patient's house were to be paid. The scheme, he said, would in no way increase the "hospital population," nor would it increase the sickness incidence: the voluntary hospitals were at the present moment actually dealing with the persons who should become members of the scheme.[1]

Dr. C. O. Hawthorne, in opposing the motion, criticised the financial basis of the scheme; he regarded this as unsound and as unlikely to be successful. The persons to whom the appeal was to be made were already taxed every week for one health service and would hardly welcome a further burden; in the nature of things most of the members would receive no benefits even over a series of years, and lapses would certainly be numerous; those admitted to hospital under the scheme would find there others who had paid no annual subscription and yet enjoyed the same benefits as the insured; and there was no certainty that a hospital bed would be available for a member when he required it. Thus, economically, the insurance was not a good one, for the benefits were not confined to policy-holders, and when the contingency contemplated by the policy arrived there was no guarantee that it would be met. Dr. Hawthorne also commented on the admission of persons without a previous medical examination; on the right, immediately after the payment of a single premium, to claim the full benefits of the contract; and on the absence of an income limit in the case of persons included within the scope of the National Insurance Act. He questioned the ethical defence of a procedure which would take the capital values of the hospital buildings, equipment, and endowments and would utilise these, not for purposes of philanthropy, but as the basis of a scheme of industrial insurance. Were the scheme successful financially the partial acquisition of the hospitals as at first proposed would gradually lead to the complete conversion of these institutions into nursing homes resting on a commercial basis and run for the benefit of the subscribers to the scheme; and the sick poor, for whom the hospitals were originally intended, would be relegated to the Poor-law infirmaries. A further consequence would be the conversion of the members of the honorary medical staffs into paid officers of an insurance organisation. Further, was it likely that voluntary subscriptions and donations would be given to organisations which had lost their charitable character and had become part and parcel of a commercial proposition? The voluntary hospital system rested on three supports—voluntary contributions, voluntary administration, and honorary medical service. Every one of these supports was undermined by the scheme now proposed, and both public and professional interests called for its rejection.

Discussion and Reply.

Mr. H. S. Souttar, supporting the motion, said that Dr. Hawthorne's argument was founded on two parts, first that the hospitals could continue to carry on, and second that the "sick-poor still existed." Neither of these is quite true. The hospitals had to get money, and the only possible sources were the

[1] See also article by Mr. Eccles in THE LANCET, 1921, i., 1057.

Government, who were unlikely to contribute, the charitable, who were unable to contribute on account of other claims, the patient when he was ill, or the patient when he was well. He thought that it was preferable to obtain the payment before illness. Lord Cave's Commission would only give money to the hospitals if the hospitals could find new money, and this was an attempt to find that new money.

Dr. R. A. Bolam did not think that the promoters of the scheme had made the benefits very clear. It was not explained to the insured that he had the use of the hospital endowments. He thought it would be preferable that the medical profession should give their services free. He personally preferred to be an honorary officer of his hospital.

Dr. J. F. Gordon Dill said that the scheme was the only one that gave hope of relieving the debt of the hospitals. It would help to prevent hospital abuse. As one of the promoters of the scheme he would be glad to have constructive criticism.

Sir James Galloway said that the hospital with which he was associated had no debt, a state of affairs which was attributable to the excellent business capacity of their administrative staff. His main concern was whether the scheme, should it be successful, would be likely to interfere with their subscribers. He did not, however, think the scheme would be a permanent success, since, like all insurance schemes, it would need to be continuously boomed.

Mr. F. R. Smyth, L.D.S., said that there was no progressive diminution of the annual premium where benefits had not been paid for the preceding year, and so no inducement to continue the premium, such as was offered by insurance companies. He would like to know whether the scheme had been submitted to an actuary.

Mr. N. Bishop Harman said he was a supporter of the scheme. Times were different now from the days when the hospitals were founded. The State had no compunction about small payments from even their Poor-law patients. Why, therefore, should there be any compunction about accepting payments from the hospital patient?

Dr. A. Cox would rather see a straightforward insurance scheme, but he thought the present scheme worth a trial.

Dr. F. J. Poynton said that above all things the staffs of hospitals must preserve their honorary status. If the hospitals must have assistance it should come from the State.

Mr. Ernest Clarke thought the scheme was likely to appeal only to those who were sick.

Dr. Gordon J. Lane thought the scheme had not been properly considered, and found it difficult to believe that 2½*d.* a week could provide all the services offered, and yet leave a surplus for the hospital.

Dr. J. W. Kynaston pointed out that the scheme had been taken up at present by only three hospitals.

Sir Charles Ryall said that this was not the first insurance scheme adopted by hospitals. In the eighteenth century the Westminster Hospital set the fashion of admission by subscribers' letters which were distributed in proportion to the amount of the subscription. The real poor had thus been unable to gain admission, and it was the discovery of a poor woman in a dying condition, on whom all the hospitals of London shut their doors, since she had no subscriber's letter, that led John Marsden to found the Royal Free Hospital. Other hospitals had been forced to abandon the subscriber's letter.

In reply Mr. Eccles said he had obtained the opinion of several people associated with insurance undertakings that his scheme was financially a sound one. At St. Bartholomew's Hospital they now charged those of their in-patients, who could pay, £2 2*s.* a week, and he thought that the subscriber who found himself in hospital free, while his next-door neighbour was paying, would congratulate himself on his foresight in joining the scheme.

On being put to the vote the resolution was defeated by a large majority.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

Australasian Medical Congress.

THE next Congress will represent a departure from precedent and will be a meeting of the British Medical Association in Australasia, to some extent like the annual B.M.A. gathering in the United Kingdom. Mr. G. Adlington Syme has been elected President, and the meeting will probably be held in February 1923, at Melbourne. Presidents of sections and other office-bearers have not yet been nominated.

Charge of Manslaughter.

A death under anæsthesia occurred at the Adelaide General Hospital on July 21st, 1921. The patient was a young man who had sustained a severely cut hand. The resident surgeon on casualty duty administered ether with the assistance of a student and a nurse. The patient ceased breathing after having vomited. The medical superintendent was summoned and performed artificial respiration, and also cardiac massage through an incision. A second resident officer was directed to perform tracheotomy, which was done. Death was subsequently found to have been due to suffocation owing to the patient having vomited. At the coroner's inquest the medical superintendent stated that the anæsthetic was not administered in accordance with the hospital rule, which required his own presence. A prominent barrister, for the relatives, demanded a verdict of manslaughter against all the medical men, but the coroner gave a verdict simply of death under anæsthesia, though he made unfavourable comment on the hospital management. Next day an information was laid charging the three doctors with manslaughter and they appeared before the police-court. The case was postponed indefinitely owing to the procedure of prosecuting counsel, who, when the hearing was resumed on Sept. 5th, made no appearance, but wrote a letter to the magistrate intimating that he did not intend proceeding with the matter. The informations were thereupon dismissed.

War Memorial.

The Victorian Branch, B.M.A., has decided to erect a memorial in the hall of the branch to the members who lost their lives during the war. A commission has been given to Mr. C. Web-Gilbert, the leading sculptor in Australia, to execute a design submitted by himself in bronze at an estimated cost of £600.

Bubonic Plague.

Within the past three weeks a decidedly unpleasant situation has arisen in Queensland with respect to bubonic plague. It appears that a case occurred in Brisbane, which after death was recognised as plague. Nothing was allowed to transpire until some three weeks later when a second case occurred. Since that time a few further cases have been reported, together with one case from Townsville. Infected rats have been found from over a wide area of Brisbane, in Townsville, and as far north as Cairns. A steamer arrived at Sydney from Brisbane during the preliminary period before the declared case was announced; plague-infected rats have since been found in Sydney in the neighbourhood of the wharf at which this steamer discharged cargo. Dead rats have also been found in several coastal steamers. Vigorous measures have been taken for disinfection of steamers and cargo, and rat destruction has been actively undertaken. The Brisbane health authorities have been severely criticised for concealment of the first case and no explanation of their action has yet been offered. Up to the present the outbreak has not spread rapidly, but there is apparently a wide distribution of infection among the rat population in the coastal ports.

Motor Fatality.

On Sept. 23rd Dr. G. A. Paul, a well-known surgeon of the younger generation, lost his life in an accident near Sydney. Dr. Paul and Dr. Howard Bullock left Sydney in a motor-car in order to visit a country house;

Dr. Bullock was driving, and in attempting a sharp curve in the road the car overturned and both were pinned beneath it. Dr. Paul died shortly after being released and Dr. Bullock was severely injured.

September, 1921.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

Indian Voluntary Hospitals.

INDIAN hospitals are not, as a rule, supported by voluntary contributions, but some hospitals, for example those of the Dufferin Fund and the Walker Hospital, Simla, are supported in this way. The difficulty experienced by hospitals at home is being fully shared by the Indian institutions, and great efforts are being made to collect funds. Ladies in prominent official positions are taking an active part in helping to raise money, and entertainments are being held in Simla and elsewhere for this purpose. At a recent meeting of the Countess of Dufferin's Fund, Lady Reading made a strong appeal for the support of the fund, which controls a very large number of hospitals for women throughout the Indian Empire. Commenting on the need for support of the League for Maternity and Infant Welfare, Lady Reading emphasised the importance of the provision of trained nurses and midwives. She pointed out that except in the presidency towns such training involved hospitals under medical women. If the training was to be good and the work successful experienced medical women and equipment for these hospitals were essential. The formation of the Women's Medical Service in India gave great impetus to women's hospitals by relieving the committees of the difficult task of finding and paying the salaries of medical women. The funds so set free were used to provide the hospitals with other requisites. The number of labour cases has increased, and nearly all the hospitals under the Dufferin Fund were now in a position to give a good practical training to nurses and midwives; but nearly all of them were also in a position of financial difficulty.

Indian Science Congress.

The ninth annual meeting of the Indian Science Congress will be held in Madras from Jan. 16th to the 21st, 1922. The Medical Research Section of the Congress will then meet for the fourth time. The honorary local secretaries are Captain Clive Newcomb, I.M.S., chemical examiner, Madras, and Dr. Mohammad Azizullah Sahib Bahadur. It is hoped that a large number of delegates from the other provinces of India will attend the Congress.

Health Officers in India.

At a conference of health officers held recently at Calcutta, it was decided to form a public health association for Bengal, and to send a deputation to the Health Minister to represent the grievances of the officers. It was also decided to urge that the service should be provincialised, or, in the event of the officers being controlled by the local board, that their appointments or dismissals should be in the hands of a board of sanitary experts who would also possess power to transfer officers. The health officers also asked for first-class travelling allowances and immediate increase of salaries.

Famine Code Committee.

Owing to the almost complete failure of the crops considerable areas in the ceded districts of the Madras Presidency have been declared to be in a state of famine, and a number of Government relief works have been instituted in order to carry the hard-hit ryots over the period until the next crop may be expected. Government relief works are controlled under rules laid down in the Famine Code, but a discussion recently held in the Legislative Council made it evident that a certain amount of dissatisfaction existed regarding the rigid manner in which the rules were said to be adhered to. In order to investigate the matter the Government appointed a committee under the chairmanship of the Famine Commissioner. The committee is composed mainly of non-officials from districts commonly affected with scarcity, but also includes two executive engineers who have had experience of famine work, and the Sanitary Commissioner. Medical opinion is required as to the physical capacity of the people for work, the question of emaciation due to insufficiency of food, the sufficiency of the various diet scales laid down in the code, and the general questions of sanitation of camps, &c. In connexion with diet scales the work of Colonel McCay, I.M.S., of Calcutta, is of interest, as his findings are somewhat antagonistic to the opinions commonly held by the layman in this country.

Ayurvedic Committee.

Mention was made some time ago in these notes of a report on Ayurvedic drugs by Dr. Koman, who carried out a prolonged investigation into the therapeutic value of the most important of these indigenous medicines. The Government have now gone a stage further, and have recently decided to appoint a small committee consisting mainly of non-officials to report on the question of the recognition and encouragement of the indigenous systems of medicine in vogue in this Presidency. The object of the proposed inquiry is to afford the exponents of the Ayurvedic and Unani systems an opportunity to state their case fully in writing for scientific criticism, and to justify State encouragement of these systems. In order that a preliminary programme of work should be drawn up, and that some indication might be given of the lines on which the inquiry should proceed, the Government nominated Khan Bahadur Muhammad Usman Sahib Bahadur as chairman, and Dr. G. Srinivasamurti as the secretary of the proposed committee. Of the ten members three general practitioners from Madras City are included, Dr. U. Rama Rao, Dr. A. Lakshmipathi Garu, and Dr. M. Subramania Ayyar; whilst the Ayurvedic practitioners are represented by K. G. Natesa Sastri Avergul, of the Venkatarama Dispensary, Madras, and C. T. Arumugam Pillai, of the Ayurvedic Dispensary, Georgetown, Madras.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

A Scientific Expedition to Peru.

EDINBURGH University has a special interest in the expedition organised by the Royal Society which leaves England this week-end for Peru, owing to the fact that Dr. J. C. Meakins, professor of therapeutics, is acting as deputy director to the expedition. The main object of the expedition is the study of the circulatory and respiratory systems amongst those who live at the high altitudes of the Andes. There is a large mining population in the villages some 16,000 ft. above sea-level, and it is reputed that these people are able to perform much heavier work than can be done by any other persons in so rare an atmosphere. Modern methods will be used in the investigation, and the results may prove of real value.

Work of the Ministry of Pensions.

The Rt. Hon. J. Ian Macpherson, M.P., at a meeting which he addressed at Oban recently, stated that shortly before he went to the Ministry of Pensions no less than 331 million pounds were required by the State for the provision of pensions—a sum six times the amount of the whole national expenditure at the time he entered political life. The Ministry of Pensions was engaged at that time, he said, in the biggest work that any public department in the world had ever undertaken. Of all those who had served in the Forces, one in three had been the subject of a pension, or, stated in another way, 3½ million persons were on

the books of the Ministry. The record cards dealing with casualties from all the theatres of war had been collected, and reached in number no less than 30 millions. Each week he received 794,000 letters. In a department of this size occasional mistakes must inevitably occur. In one town 100,000 cases might be successfully and efficiently dealt with and no complaint arise, but if one slip should occur in dealing with all that number, the Minister's life was made not worth living.

The functions of the Ministry were to restore the pensioner and to reinstate him in the social and industrial life of the country. They had 90 hospitals, controlled 14,000 beds in their own institutions and 10,000 beds in civil hospitals, and there were at present 158,000 pensioners under treatment for whom the Ministry defrayed the cost. By means of treatment and training in convalescent centres they were trying to restore these men as fit units to the field or factory. After previous wars disabled men were too often left as derelicts on the ocean of life. They served their country in its hour of need and returned to find their families pauperised, and 6*d*. a day their reward. He refused to accept the idea that the Ministry of Pensions should be run as a business institution. A business man could do what he liked with his own money. He could make bargains and cut losses, but that would not do with the trustees of public funds, who had to hold the balance between the interests of the taxpayer, and a just and generous treatment of those who had suffered in the service of the nation.

Pension Issue Office for Scotland.

An office in Edinburgh has now been opened for the issue of pensions to Scottish soldiers. The change of administration from London to Edinburgh will take place gradually, names being transferred in alphabetical order. Soldiers only are to be dealt with for the present, while naval and air force cases will be transferred early next year. The cases of widows and dependents are meantime to be administered from London.

VITAL STATISTICS OF LONDON
DURING OCTOBER, 1921.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 19·3 per 1000 of the population, estimated at 4,531,971 persons in the middle of 1920; in the three preceding months the rates had been 10·3, 8·5, and 14·0 per 1000. Among the metropolitan boroughs the lowest rates from these diseases were recorded in Kensington, Chelsea, the City of London, Lambeth, Wandsworth, and Lewisham; and the highest in Islington, Finsbury, Shoreditch, Bermondsey, Battersea, and Greenwich. The prevalence of enteric fever was about 25 per cent. less than in the preceding month; of the 33 cases notified during the four weeks ended Oct. 29th, 6 belonged to St. Pancras, and 3 to each of the boroughs of Kensington, Chelsea, Hackney, and Camberwell. There were 28 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 27, 32, and 37 at the end of the three preceding months; the weekly admissions averaged 4, against 5, 5, and 7 in the three preceding months. The prevalence of scarlet fever again showed a marked increase—40 per cent.—over the preceding month, and was considerably higher than in any month of the present, or the three preceding years; in the month of October, 1918 (five weeks), the notified cases of scarlet fever number 1031, in 1919 (five weeks) 2179, in 1920 (four weeks) 3700, as against 4625 in the four weeks of

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING OCTOBER, 1921.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1920.	Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.								Deaths from all causes.	Death-rate per 1000 living.
		Enteric fever.	Other continued fevers.	Small-pox.	Scarlet fever.	Diphtheria.*	Erysipelas.	Poliomyelitis and polioencephalitis.	Encephalitis lethargica.	Cerebro-spinal fever.	Puerperal fever.	Total.	Annual rate per 1000 persons living.	Enteric fever.	Small-pox.	Measles.	Scarlet fever.	Whooping-cough.	Diphtheria.*	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,531,971	33	—	—	4625	1803	205	5	3	3	27	6704	19·3	11	—	10	20	33	99	275	448	1·3	3913	11·3
West:																								
Paddington ...	149,673	—	—	—	126	37	6	—	1	—	2	172	15·0	—	—	—	—	1	—	10	11	1·0	118	10·3
Kensington	164,177	3	—	—	127	41	8	—	1	—	—	180	14·3	1	—	—	—	1	1	11	14	1·1	139	11·0
Hammersmith ...	136,200	—	—	—	143	42	2	—	—	—	1	188	18·0	—	—	—	2	—	1	11	14	1·3	122	11·7
Fulham	158,621	—	—	—	123	54	7	—	—	—	3	187	15·4	—	—	—	—	2	2	10	14	1·2	111	9·1
Chelsea	62,987	3	—	—	23	12	1	—	—	—	—	39	8·1	—	—	—	—	—	—	3	3	0·6	68	14·1
City of Westmin'r	132,615	2	—	—	111	28	9	—	—	—	—	150	14·7	—	—	—	—	1	4	8	13	1·3	104	10·2
North:																								
St. Marylebone ...	101,856	1	—	—	85	25	4	—	—	—	—	115	14·7	—	—	—	—	1	—	1	2	0·3	83	10·6
Hampstead ...	91,519	2	—	—	54	83	3	—	—	—	1	143	20·4	—	—	—	—	—	6	3	9	1·3	80	11·4
St. Pancras	228,178	6	—	—	283	72	10	—	—	—	1	372	21·3	—	—	3	—	2	—	11	16	0·9	181	10·3
Islington	335,907	1	—	—	525	159	9	—	—	—	3	697	27·0	—	—	—	3	2	8	26	39	1·5	306	11·9
Stoke Newington ...	52,984	—	—	—	51	18	3	—	—	—	—	72	17·7	—	—	—	—	—	5	1	6	1·5	39	9·6
Hackney	225,372	3	—	—	249	58	8	—	—	—	—	318	18·4	1	—	—	3	1	4	10	19	1·1	191	11·0
Central:																								
Holborn	39,676	—	—	—	44	20	3	—	—	—	—	67	22·0	—	—	—	—	—	1	—	1	0·3	41	13·5
Finsbury	78,291	—	—	—	93	61	9	—	—	—	1	164	27·3	—	—	—	—	2	8	6	16	2·7	89	14·8
City of London ...	14,447	—	—	—	10	2	1	—	—	—	—	13	11·7	—	—	—	—	—	—	—	—	—	12	10·8
East:																								
Shoreditch	102,044	1	—	—	134	63	7	—	—	—	1	206	26·3	1	—	1	—	1	4	17	24	3·1	105	13·4
Bethnal Green ...	114,471	—	—	—	140	51	14	—	1	—	1	207	23·6	—	—	1	—	1	2	18	22	2·5	114	13·0
Stepney	241,770	1	—	—	225	155	16	—	—	1	1	399	21·5	—	—	1	3	1	14	16	35	1·9	249	13·4
Poplar	159,766	—	—	—	221	76	10	—	—	—	2	309	25·2	1	—	3	—	2	5	11	22	1·8	153	12·5
South:																								
Southwark	187,142	—	—	—	181	77	13	—	—	—	1	272	18·9	—	—	—	1	1	3	17	22	1·5	175	12·2
Bermondsey ...	129,189	1	—	—	148	108	11	—	—	—	1	269	27·1	2	—	—	2	2	3	11	20	2·0	127	12·8
Lambeth	293,572	—	—	—	233	56	12	—	—	—	—	301†	13·4	—	—	—	1	—	7	22	30	1·3	284	12·6
Battersea	165,664	1	—	—	257	93	4	—	—	1	2	358	28·2	—	—	—	1	1	5	6	13	1·0	138	10·9
Wandsworth ...	346,990	1	—	—	249	81	13	—	—	1	2	347	13·0	1	—	—	—	5	3	13	22	0·8	237	8·9
Camberwell ...	284,712	3	—	—	294	96	11	—	—	—	—	404	18·5	—	—	1	2	3	5	19	30	1·4	210	9·6
Deptford	115,636	1	—	—	106	30	5	2	—	—	1	145	16·3	—	—	—	1	1	—	4	6	0·7	112	12·6
Greenwich	102,408	1	—	—	143	84	1	1	—	—	—	230	29·3	—	—	—	1	2	4	3	10	1·3	89	11·3
Lewisham	174,438	2	—	—	111	52	3	2	—	—	2	172	12·9	3	—	—	—	—	—	4	7	0·5	129	9·6
Woolwich	141,666	—	—	—	136	69	2	—	—	—	1	208	19·1	1	—	—	—	—	4	3	8	0·7	107	9·8

* Including membranous croup.

last month. This disease was proportionally most prevalent in St. Pancras, Islington, Finsbury, Shoreditch, Bethnal Green, Poplar, Battersea, and Greenwich. The Metropolitan Asylums Hospitals contained 6154 scarlet fever patients at the end of the month, against 3722, 3408, and 4847 at the end of the three preceding months; the weekly admissions averaged 1000, against 567, 467, and 840 in the three preceding months. Diphtheria also was considerably more prevalent—40 per cent.—than in September, and was higher than in any month of this year, or the three preceding years; 1803 cases were notified during the month (four weeks), against 937 in October, 1918 (five weeks), 1169 in October, 1919 (five weeks), and 1449 in October, 1920 (four weeks). The greatest proportional prevalence of this disease occurred in Hampstead, Finsbury, Shoreditch, Stepney, Bermondsey, Battersea, and Greenwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1969, 1709, and 2031 at the end of the three preceding months, further rose to 2777 at the end of October; the weekly admissions averaged 445, against 250, 209, and 322 in the three preceding months. Erysipelas was proportionally most prevalent in Holborn, Finsbury, Bethnal Green, and Bermondsey. Of the 5 cases of poliomyelitis, &c., 2 belonged to Deptford, 2 to Lewisham, and 1 to Greenwich: in the three preceding months the notified cases numbered 9, 13, and 10 respectively. Three cases of encephalitis lethargica were notified during the month, against 9, 5, and 5 in the three preceding months. The notified cases of cerebro-spinal fever numbered 3, against 7, 9, and 5 in the three preceding months. The 27 cases of puerperal fever included 3 in Fulham, 3 in Islington, and 2 each in Paddington, Poplar, Battersea, Wandsworth, and Lewisham.

The mortality statistics in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ended Oct. 29th, the deaths of 3913 London residents were registered, equal to an annual rate of 11·3 per 1000; in the three preceding months the rates had been 9·8, 10·6, and 10·9 per 1000. The death-rates ranged from 8·9 in Wandsworth, 9·1 in Fulham, 9·6 in Stoke Newington, in Camberwell, and in Lewisham, and 9·8 in Woolwich, to 13·0 in Bethnal Green, 13·4 in Shoreditch and in Stepney, 13·5 in Holborn, 14·1 in Chelsea, and 14·8 in Finsbury. The 3913 deaths from all causes included 448 which were referred to the principal infectious diseases; of these, 11 deaths resulted from enteric fever, 10 from measles, 20 from scarlet fever, 33 from whooping-cough, 99 from diphtheria, and 275 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Chelsea, St. Marylebone, Holborn, Deptford, Lewisham, and Woolwich; and the highest in Finsbury, Shoreditch, Bethnal Green, Stepney, Poplar, and Bermondsey. The 11 fatal cases of enteric fever exceeded the average in the corresponding period of the five preceding years by 4; of these deaths 3 belonged to Lewisham and 2 to Bermondsey. The 10 deaths from measles were but half the average; of these 3 belonged to St. Pancras and 3 to Poplar. The 20 fatal cases of scarlet fever were 8 in excess of the average; of these, 3 belonged to each of the boroughs of Islington, Hackney, and Stepney, and 2 each to Hammersmith, Bermondsey, and Camberwell. The 33 deaths from whooping-cough were 17 above the average; of these, 5 belonged to Wandsworth and 3 to Camberwell. The 99 fatal cases of diphtheria exceeded the average by 40; this disease was proportionally most fatal in Hampstead, Stoke Newington, Finsbury, Shoreditch, Stepney, and Greenwich. The 275 deaths from infantile diarrhœa exceeded the average by 64; the greatest proportional mortality from this disease occurred in Hammersmith, Islington, Shoreditch, Bethnal Green, Southwark, and Bermondsey. The aggregate mortality in London during October from these principal infectious diseases was 38 per cent. above the average.

The deaths from influenza registered in London during the four weeks ended Oct. 29th numbered 40, against 15, 9, and 21 in the three preceding months, and 22, 18, 1721, 65, and 21 in the corresponding periods of the five preceding years.

TREATMENT OF VENEREAL DISEASES IN LONDON.—The Minister of Health and the County Councils concerned have consented to an arrangement under which the London County Council will be able, within defined limits, to make necessary modifications in its scheme for the diagnosis and treatment of venereal diseases, without the delay, previously unavoidable, in obtaining the consent of all the participating authorities to any such modification.

Correspondence.

"Audi alteram partem."

THE EDUCATION OF DEAF CHILDREN.

To the Editor of THE LANCET.

SIR,—Mr. A. J. Story's letter in your issue of Nov. 12th opens up a question that has long wanted ventilating, and never more so than at the present time. Perhaps I, who have a knowledge of deaf children and the methods of their education based upon some 14 years of unceasing work among them, may be permitted to speak plainly upon it.

I would first express my appreciation of those who cheerfully devote themselves to the instruction of deaf children, a work the most arduous and exacting in the teaching profession and which is followed with a steadfastness of which the reward lies only in results. Mr. Story points out that teachers of the deaf "would welcome with open arms anything that would give their pupils even a serviceable modicum of hearing ability." This I can cordially endorse, for I have found them ever ready to coöperate with the doctor and to help him to the utmost from their stores of experience, provided he will let them do so. Sufferers from deafness are ever upon the look-out for some heaven-sent miracle which will restore to them the sense they lack. They are consequently always eager to kneel in flocks, sublimely credulous, at the feet of anyone who professes to have discovered a short and easy road to the renewal of hearing. The little gods to whom they kneel have, most of them, clay feet. The persons who assert this ability to restore the "snows of yester year" do so from one of two motives—deliberate fraud or complete ignorance. Of the fraudulent I do not intend to speak; I have dealt with such impostors at other times and in other places, including the Court of King's Bench. They will continue to batten upon human infirmity and credulity so long as the press, intent upon giving the public "What it *warnts*" rather than what it needs, will publish their advertisements.

But those who profess to restore hearing from a complete ignorance of the true conditions with which they have to deal stand upon an entirely different footing. I can say, with my friends Mr. Story and Dr. Kerr Love, that I have never known a single deaf child in schools to recover hearing power. But every day I see children, originally believed to be totally deaf, develop a certain amount of hearing as education progresses, which is quite another matter. This developed hearing is neither a new nor a restored hearing. *It was there all the time*, unrecognised, unused. The children had no conception of the meaning of the sounds they heard, no means of asking what they meant. Their hearing, too small to be of use in their physiological education, remained, so to speak, *latent*, until the gradual acquisition of language by education under the oral system brought appreciation of it to its possessor. These are the children which, getting into the hands of someone ignorant of the real facts, will respond to education. Such children make no response to tests when first examined, and to decide whether they have or have not any residual hearing is often a matter of great difficulty. Once education is begun and the child is watched and tested repeatedly, some slight hearing—it may be anything from mere perception of sound to complete vowel hearing as described by Mr. Story—will gradually unfold as teaching progresses and the mind is awakened to appreciation. Every teacher of the deaf knows this; it is his business and he makes every possible use of it. Furthermore, some of the effect of education may be delayed, and I have noticed repeatedly how boys and girls with a limited amount of residual hearing, will, as it were, "blossom out" within a few months of their transference (at 12½ or 13 years old) from the elementary to the secondary school. Of course, a

great deal depends upon individual intelligence, and it is no uncommon thing to see a smart boy making every use of small residual hearing side by side with a dull one who has four times as much but does not, apparently, know what to do with it.

There appear, from time to time, persons who have evolved schemes, more or less original (chiefly less), for "re-educating hearing." Such schemes are neither heaven-born nor new, they are at least as old as the first century of the Christian era, when Archigenes advocated intensified sound and trumpets to remedy defective hearing. Many of these ideas are well exploited, highly vaunted, and then sink into oblivion. A few, a very few, survive, often much modified. What is so deplorable about them is that each one leaves behind it a long trail of wounded—disappointed deaf adults, deaf children, whose education has been neglected for the prosecution of vain experiment, and parents who have bought experience. In practically every case the promoter of the scheme is completely ignorant of the psychology of the deaf child, the method (proved by long and practical experience) of his teaching, and the fact that every teacher of the deaf worthy of the name is making the utmost use of residual hearing every minute he is at work *and by better methods*. The thing is unfortunate, but the poor inventor is by no means alone in his ignorance; he merely shares in that remarkable ignorance of the deaf child displayed by many of the medical profession (even including some specialists), an ignorance which appears frequently to lead doctors into making the astounding and wholly unwarranted statement that a child will regain its hearing at the age of seven! I would, further, emphasise the fact that the deaf child stands upon an entirely different plane to the deaf adult. The latter is already in possession of language and automatic speech. Attempts at restoring hearing in his case, by suggestion or other means, may be successful, but to apply the same reasoning, the same arguments, the same treatment to the deaf child is unscientific and useless. It is to construct the same hypothesis upon totally different and totally unsuitable foundations.

In conclusion, I would point out that there exist individuals who, having found a hypothesis, become so enamoured of it that they work upon it in what Dr. Millais Culpin has so aptly called "logic-tight compartments." Therein enclosed, impervious to every fact which may vitiate their calculations, they justify themselves by a pseudo-reasoning satisfactory to their own peculiar mental complex. Some of the so-called re-education schemes would appear to have been framed in this way.

I am, Sir, yours faithfully,

MACLEOD YEARSLEY.

Welbeck-street, W., Nov. 15th, 1921.

PHYSICAL EXERCISE IN HEART DISEASE.

To the Editor of THE LANCET.

SIR,—An annotation in your issue of Nov. 5th drew the attention of your readers to the value of graduated exercises in the treatment of heart disease. Although the method is an old one, its proper value has as yet found but little appreciation. This is particularly the case in the provinces, where it is practically unknown.

But if this treatment is to be successful it is necessary to take the following precautions:—

1. The exercise prescribed in each case should bear a certain relationship to the condition of the heart muscle.
2. The method ought not to be used in cases which show grave myocardial lesions.
3. In advanced cases it is advisable to make the reaction to work of the arterial pressure and pulse-rate as a sort of standard by which the amount of exercise to be taken can be gauged. Suppose a given amount of exertion produces an increase of pressure, say 10 mm. Hg, and this reaction is considered a moderate one, then the exercises are so graduated that the subsequent treatment will produce about the same reaction. Repeated exercises of increasing intensity, if this method is applied, will not produce a greater strain.
4. In advanced cases one group of muscles should be exercised at one time, the rest remaining passive. If all muscles are exercised at one and the same time an undue strain is brought to bear on the heart, unless the exercises are of so mild a nature as to be ineffective for the purpose. I found the Zander system, which I have been using for the last eight or nine years, the best method for carrying out this treatment.
5. In order to avoid all possible strain it is best to start with more difficult exercises, gradually going down to the easy ones, and then allowing a few minutes for rest.
6. It is advantageous to combine massage with exercises.
7. After the patient has carried out a course of treatment he should be recommended to take graduated walking and climbing exercise.

Graduated exercises carried out with due precaution give far better results in heart trouble than does any other form of treatment.

I am, Sir, yours faithfully,

Liverpool, Nov. 14th, 1921. I. HARRIS.

RICKETS AND VITAMIN DEFICIENCY.

To the Editor of THE LANCET.

SIR,—Dr. Amy Hodgson's admirable chemical and clinical study in your issue of Nov. 5th throws a valuable new light on the vexed problem of rickets. Any practitioner with experience of rickets could also cite cases in which the diet was in no sense deficient in vitamins. The discrepancies found by various experimental and clinical workers are explainable if we suppose that infants may have a varying capacity to absorb, or utilise, the vitamins presented to them; just as gouty and diabetic subjects have an incapacity to absorb other and grosser articles of diet. Too large a proportion of carbohydrates, or other indiscretions, might well diminish still further the capacity of absorption.

There are likewise thin, tuberculous disposed subjects who may take much fat, yet still remain thin and tuberculous disposed—unable perhaps to utilise the fat or the resistance-aiding vitamins which it contains. Some of these patients were rickety when young, as their deformed chests testify.

I am, Sir, yours faithfully,

E. WARD, M.D., F.R.C.S.,
Tuberculosis Officer, South Devon.

Paignton, Nov. 17th, 1921.

CLAYDEN *v.* WOOD-HILL.

To the Editor of THE LANCET.

SIR,—The report in your issue of Nov. 19th (p. 1073) upon this important medico-legal case fails, in my opinion, to bring out the facts quite clearly. Stated briefly, these were as follows: The patient sustained a fracture of the femur just below the small trochanter and was treated at Beccles Hospital by methods which were in accordance with the usual surgical teaching. She was not X rayed, because the apparatus at Beccles was not good enough to enable an X ray of the upper part of the thigh and hip to be obtained. She left the hospital at the end of eight weeks walking on crutches, and according to Dr. Wood-Hill's evidence and that of his partner, the fracture was then in a satisfactory position and the limb half an inch short. About ten days after her return home, the leg gave way under the body weight, and considerable pain and swelling occurred. I saw the patient 14 days after the incident, and operated upon the fracture four days later, finding the fracture united with angulation, the shortening being one and half inches.

The allegation of negligence was based upon: 1. A wrong diagnosis of the level at which the fracture took place, due to (*a*) the absence of an X ray, and (*b*) failure to examine and "set" the fracture under an anæsthetic. Unfortunately, Dr. Wood-Hill had been induced to commit himself to a sketch showing the probable level of the fracture, in which he placed it too low down in the femur. 2. A failure to treat the limb in an abducted position as the result of the wrong diagnosis. As a result of this plaintiff alleged that the fracture was malunited at the time that she left Beccles.

The defence sought to prove: 1. That the fracture was diagnosed as one of the upper third of the femur. 2. That the limb was kept abducted during treatment. 3. That the fracture was satisfactorily united without angulation and with only half an inch of shortening at the time plaintiff left Beccles. 4. That the union subsequently gave way because the plaintiff put weight upon it contrary to Dr. Wood-Hill's advice.

Actually the result of the case depended largely upon the question whether a re-fracture had or had not occurred. I was asked whether at the operation I found evidence of re-fracture, and replied that I did not; but I pointed out that the interval between the giving way of the limb and the operation (18 days) was sufficient for signs of re-fracture to have disappeared. Apart from this, both judge and jury seem to have ignored the possibility of bending of the callus, a well-known and common incident in fracture of the femur, which I endeavoured to emphasise in my evidence. Counsel, in summing up, claimed that my evidence negatived re-fracture, and, on the strength of this, the evidence from the Beccles Hospital that the position of the bone was satisfactory when the plaintiff left the hospital was ignored or disbelieved.

Important lessons to be learnt from this case are that every case of fracture or possible fracture should be treated as a possible medico-legal one; that careful notes made at the time should be kept; that if an X ray is not taken, the reason should be stated in writing; and that practitioners should not commit themselves to statements or diagrams of the nature of an injury except on X ray evidence. Apart from this, the medical profession must feel considerable perturbance at a legal decision which appears to place upon them responsibility for the result of their treatment apart from their acknowledged responsibility to use recognised methods and to use them carefully, for it would appear that the mere fact that the result of the treatment of the fracture was unsuccessful was accepted as a sufficient cause of action. This seems to suggest an entirely new aspect of medical responsibility.

I am, Sir, yours faithfully,

Portland-place, W., Nov. 21st, 1921. R. C. ELMSLIE.

NOTIFICATION OF TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—I write to support the suggestion of Dr. G. Lissant Cox which appeared in his paper contained in your issue of Nov. 19th to the effect that Article V. of the Public Health (Tuberculosis) Regulations should be amended by the removal of the proviso that a doctor shall not notify a case of tuberculosis if he has reasonable grounds for believing that the case has already been notified in the same district. In an industrial area it is not uncommon for a person to change his doctor. The first doctor may not have quite made up his mind as to the diagnosis, and the second doctor thinks that the first medical attendant has notified. If notification is to be of real value it must be complete, and this is one way to help to make it of real value.—I am, Sir, yours faithfully,

W. ALLEN DALEY,
Nov. 21st, 1921. M.O.H., Blackburn.

THE COCAINE HABIT.

To the Editor of THE LANCET.

SIR,—Some 25 years ago I reported the case which I treated here of a woman, about 35 years of age, moving in very good society in England, who had been taking 2 g.—i.e., 30 gr. of cocaine daily for some years—employing cognac and chloral hydrate as counter-poisons. Her drug bill amounted to over £100 a year. I was able to reduce the amount of cocaine by three-fourths in five weeks. She got rid of the remnant of the habit herself by her resolution and resort to much physical exercise—e.g., bicycling. She told me then that *all* her acquaintances living in London used some such stimulant to "get through the Season," an exaggeration that certainly had some foundation. From what I hear it appears to me necessary to warn the medical profession in England to prescribe cocaine as little as possible, or never. In the case to which I have referred it was ordered for outward application, and obliging chemists all over the world renewed the prescription. The cocaine habit is on the increase here. A few days ago a chemist's shop was broken into in Zurich and among the large store of medicines stolen were cocaine, morphine, veronal, pantopon, opium, and scopolamine. This may repeat itself anywhere unless a close scrutiny is kept over illegal sales of poison.

I am, Sir, yours faithfully,

TH. FINDLATER ZANGGER, M.D.
Zurich, Nov. 18th, 1921.

THE EARLY DISCHARGE OF SCARLET FEVER CASES.

To the Editor of THE LANCET.

SIR,—Referring to the notice of my annual report in your issue of Nov. 5th (p. 978) I beg to say that I claim no priority for my action of dismissing uncomplicated cases of scarlet fever from hospital after a stay therein of less than the orthodox period of six or eight weeks, and as a matter of fact Dr. S. G. Moore has reminded me that he had done this for some time previously with the precaution of using salicylic acid as a disinfectant of the desquamating cuticle; but my investigations, subsequently borne out by practical experience, convinced me that this was not necessary, and that the ordinary precautions generally in vogue are all that is required.

I am, Sir, yours faithfully,

Edinburgh, Nov. 12th, 1921. JAS. T. NEECH.

The Services.

ROYAL ARMY MEDICAL CORPS.

Maj. A. E. Atkinson, late temp. Capt., to be temp. Maj., and to relinquish the rank of Maj.

Capt. C. H. Stringer to be temp. Maj. whilst spec. empld. as D.A.D. of H.

Officers relinquishing their commissions:—Temp. Capt. E. E. Chipp (granted the rank of Maj.). Temp. Capt. J. H. Rodgers (retains the rank of Maj.). Temp. Lts. retaining the rank of Lt.: G. A. Clarkson and J. H. Howitt.

A. James to be temp. Lt. whilst empld. as a Dental Surg.

TERRITORIAL ARMY.

Maj. R. Lindsay, having attained the age limit, is retired and retains the rank of Maj., with permission to wear the prescribed uniform.

Capt. A. R. Paterson, having attained the age limit, is retired and is granted the rank of Maj.

Capt. W. Murray, having attained the age limit, is retired and retains the rank of Capt.

Capt. A. J. A. McCabe-Dallas resigns his commn. and retains the rank of Capt.

Lt. J. G. B. Coleman (late R.A.M.C.) to be Lt.

INDIAN MEDICAL SERVICE.

The King has approved the retirement of Lt.-Cols. C. H. James, D. C. Kemp, and S. B. Smith.

CENTRAL COUNCIL FOR LONDON BLIND.—The London County Council has appointed Capt. O. E. Warburg to be chairman of the newly constituted Central Council. The chairman and vice-chairman of the County Council's Special Committee for the Welfare of the Blind automatically become members of the Central Council. In addition, the County Council has appointed the following six persons with special knowledge of the needs of the blind to be members of the Central Council: Mr. A. E. Barber, Mrs. Adolphus Duncombe, Capt. Ian Fraser, Mrs. W. F. Hamilton, Mr. Henry Stainsby, and Mr. F. G. Mowatt. The President of the Board of Education and the Minister of Health informed the County Council that, while they did not see their way to appoint representatives to serve on the Central Council, they were anxious to render assistance and were willing to allow representatives to attend informally at meetings. Seven associations and institutions have appointed members, and negotiations are proceeding to obtain nominations from the remainder of the 19 associations in London who are concerned with the welfare of the blind.

GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

THE opening of the winter session of the General Medical Council took place on Nov. 22nd, under the presidency of Sir DONALD MACALISTER.

The PRESIDENT commenced his address from the chair by pointing out that under the new Dentists Act the Privy Council is empowered to appoint three qualified dentists to be additional members of the General Medical Council, who must also be members of the new Dental Board, constituted under the Act. He stated that the following had been appointed: Mr. W. H. Dolamore, Mr. W. H. Gilmour, and Mr. W. Guy.

Dental Board of the United Kingdom.

The President continued:—

"With special satisfaction I announce that the Privy Council have appointed, as the first Chairman, the Right Hon. Francis Dyke Acland, M.P., already well known to the Council for his distinguished public services, and in particular for his fruitful labours as Chairman of the Departmental Committee on Dental Practice. It is vouchsafed to few such Committees to see their recommendations so promptly and effectively embodied in actual legislation. The Council has loyally coöperated with the Government and with the dental profession in shaping the amended law; and it cannot but rejoice that Mr. Acland has been induced to accept the responsibility of guiding the professional body, which this law has established, through its first stages of organisation and operation. For over 40 years the Council has had the duty of regulating dental education and registration under the imperfect Act of 1878. The Dentists Register for 1922, now nearly complete, will be the last to appear under its authority. The much larger volume bearing that name will henceforth be the work of the Dental Board. The long experience of the Council and its officers will be placed unreservedly at the service of the members of the Board when they take up their laborious and delicate task under Mr. Acland's direction. The new Act leaves to the Council certain important duties relating to dental education, examination, and discipline. These necessarily imply much mutual consultation and coöperation between the Council and the Dental Board. For this reason alone it would appear to be highly desirable that the office-buildings of the Council and of the Board should be adjacent and permit of ready inter-communication. The site to the north of this building is at the disposal of the Board, should it take the view I have mentioned concerning the convenience and economy of erecting its offices there.

The law gives power to the Council to act in dental matters by an Executive Committee, including at least one of the additional members. It will be expedient to set up this Committee at once. Probably you will think it proper to follow the analogy of the Act; and, as the Council for dental purposes consists of ordinary and additional members, to constitute the Dental Executive of the ordinary members of the Executive with an additional dental member. Various orders, rules, regulations, &c., must without delay be framed by the Board, and these have in general to be approved by the Council before they become operative. In order to avoid the expense and inconvenience of frequent short meetings of the Council for the purpose of considering and expressing such approval, it would be advisable that this power should, at least in the first instance, be delegated to the Dental Executive Committee. It is regarded as certain that one or more meetings for the purpose will have to take place during December, in order that the Board may get to work at the beginning of the new year. It will also be necessary that the Council's own Standing Orders should be thoroughly revised, if only for the purpose of eliminating the parts made obsolete by the Dentists Act, 1921, and of adapting the remainder to altered conditions. I shall propose that the revision be remitted to the Executive Committee for report to the Council in May."

The Registration Figures for 1921.

During the current year (1921) up to the present date, it appeared from the President's address, the number of practitioners registered in the Medical Register was about 1600, as compared with 1457 for the whole year 1920. The number of medical students registered in 1920 was 2531; at the present date the registrations for 1921 approached, he said, 1500, a much more manageable number than before. The number of registered dental students shows a proportionate reduction from 560 to 320, which is about the average number before the war.

Reciprocity in Practice.

The President re-stated the position of medical reciprocity between this country and Belgium, and gave the interesting information that, as between this country and Spain, the whole question is being reconsidered, it being possible that fresh legislation on the part of Spain will admit of reciprocal recognition of professional qualifications. Applications, he added, had been received from certain new universities in South Africa, now legally constituted within the Union, and the Executive Committee of the Council, after consideration of the particular courses of professional study, had agreed to recognise the degrees as qualifications registrable in the appropriate list of the Medical Register.

Practice of Midwifery in India.

On the subject of the standard of obstetrical knowledge attained to by those holding degrees and diplomas from Indian universities, important communications, said the President, had been received from the universities, from the Indian Government, and from the Secretary of State for India. He continued:—

"In some cases it is reported in the memorandum on the whole subject prepared for the Executive Committee that amendments in the University Regulations concerning instruction in midwifery have been or will be made. In others that any improvement of the existing conditions will require time and involve expense. The Government of India explains, through the Secretary of State, that the question of extending the facilities for midwifery training in Indian university medical schools has for some time been under examination; but urges that, in view of certain present conditions, further time should be granted for improvement before the Executive Committee decides on the question of withdrawing its recognition from Indian qualifications.

"The Secretary of State, 'while deeply impressed by the considerations urged by the Government of India, fully appreciates the importance which the General Medical Council rightly attach to the fulfilment, by individual candidates for a licence to practise, of the midwifery practice enjoined in the [Council's] resolutions.' He deems it eminently desirable that the Indian medical schools shall equip themselves with the clinical and other facilities necessary to enable Indian graduates desirous of registration in England to comply with the Council's requirements; but he asks the Council to allow to the several universities a suitable extension of time within which to reform their midwifery and gynæcological curricula, if willing and able to do so. He further offers to request the Government of India immediately to depute an experienced medical officer, fully conversant with the practice of gynæcology and obstetrics, to visit in turn the Indian medical schools, and to explain the nature of the requirements which are considered essential if their respective degrees are to continue to be recognised in this country. This officer would transmit for communication to the Council a report on each University medical school, setting forth under proper heads such information as would assist the Council in coming to a decision regarding the recognition of its degrees. The Indian Legislative Assembly has, moreover, passed a resolution recommending to the Governor-General of India in Council that the various Local Governments be advised to make more satisfactory arrangements for giving practical training in midwifery to students undergoing instruction for medical degrees and diplomas, and to bring the training up to the standard of the universities of the United Kingdom where it is not already so. The Legislative Assembly also asks that further time may be given by the Council before a final decision regarding recognition is taken.

"In view of the replies of the majority of the universities, which indicate their purpose to improve the standard of their requirements in midwifery, and of the representations of the Indian Government and the Secretary of State, the Executive Committee have resolved to postpone the consideration of the question of recognition from February, 1922, to a later date, and in the meantime to accept the suggestion made by the Secretary of State that a report, on the matters detailed in his official letter, should be obtained and communicated to the Council. The Committee have intimated to the Secretary of State that it is prepared to nominate to the Government of India a member of the Council, who should accompany the medical officer appointed to visit the Indian universities, and be associated with him in framing the report in question."

The Inspection of Examinations.

The President stated that a cycle of inspection and visitation by which the Council ascertains the standard

of the qualifying examinations held in this country had just been completed, the reports being in the hands of the members of the Council. On these and on any general conclusions regarding medical education the Examination Committee of the Council would report.

The inspection of the numerous examinations for

Diplomas and Degrees in Public Health

has been carried out, and concerning these post-graduate qualifications, for which the Council has a direct and special responsibility, the President said:

"The Diploma purports to guarantee that the holder possesses an expert knowledge of State Medicine, that he is highly proficient in all the branches of knowledge, scientific and practical, that concern the public health, and that he is fit to hold the administrative position and exercise the statutory functions of a medical officer of health. The rapid growth in the number and importance of these functions makes it necessary that the Council should from time to time revise the conditions it prescribes for the training and examination of such medical officers. It may find that certain subjects have become less necessary than of old, while other subjects, not heretofore greatly regarded, have become important for full efficiency. The weighty and well-considered general report of our inspector, Dr. Bruce Low, in which he sums up the lessons of his observations, deserves the Council's careful attention from this point of view. It would appear that for the modern Public Health Service the qualification to be required before admission to office should be more than an academic certificate, attainable after nine months or so of additional study, by a licentiate or graduate who has just obtained his first licence to practise. It should imply a greater maturity of outlook, a deeper knowledge of principles, and a fuller practical acquaintance with actual administrative methods than an inexperienced practitioner can fairly be expected to compass in a year. Something equivalent to a short apprenticeship in a working Public Health Department is in fact needed to supplement the lectures and demonstrations of the class-room and laboratory. The Public Health Committee of the Council, impressed by these considerations, has after full discussion prepared a series of Recommendations in this general sense. These, if they should meet with your approval, will have the effect of rendering the Council's rules simpler in expression and more uniform in operation, and of ensuring a greater maturity and a higher level of practical efficiency in those who propose to devote themselves as administrative specialists to the Public Health Service."

A Heavy Programme.

The President announced an invitation from the Revision Committee of the Pharmacopœia of the United States to coöperate with the Pharmacopœia Committee of the General Medical Council in the solution of problems of common interest, and concluded his address by stating that many matters of importance had been placed on the programme for the session, making it likely that the Council would have to sit throughout the week. Four disciplinary cases will be dealt with during the session, some of them suggesting that the extreme importance of the issue of correct medical certificates is not sufficiently recognised by the profession at large.

THE Duke of York has accepted the office of President of the Corporation of the Seamen's Hospital Society (Dreadnought), Greenwich.

HERBERT CHARLES WILKIN, M.R.C.S., L.S.A.: A VETERAN.—A very old member of the profession died on Nov. 11th in the person of Dr. Wilkin. He was born on Oct. 6th, 1832, and was thus in his ninetieth year. The son of Henry Wilkin, surgeon, of Connaught-terrace, W., he was educated at Mitcham Grammar School and came up to St. George's Hospital in September, 1852. He took the ordinary double qualification of his day, the M.R.C.S., L.S.A. in 1855, and proceeded to the Crimea as surgeon to the transport ship *Argo;* later he became assistant surgeon, 3rd Royal Surrey Militia, and settling in the Paddington district he acted as consulting surgeon to the Paddington Maternity and Rounhams Convalescent Home; he was also a member of the Harveian and Pathological Societies. In Paddington and in harness he continued to the end of his long life. In an interesting letter written to the Dean of St. George's Hospital in September of this year, he stated that he was dresser at the hospital to Mr. Cæsar Hawkins and clerk to Dr. Bence-Jones, and that the late Mr. Timothy Holmes was the house surgeon. He died at 27, Aldridge Park Villas, Westbourne Park, where he was in practice.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Pharmacy Acts Amendment Bill.

Mr. O'GRADY, supported by Mr. WATTS MORGAN and Mr. CASEY, have introduced into the House of Commons a Pharmacy Acts Amendment Bill "to regularise the position of all persons trading as chemists and druggists or pharmacy store proprietors in the sale of drugs, the dispensing of doctors' prescriptions, and the sale of patent medicines." The Bill was formally read a first time before the prorogation, but time prevented it being proceeded with further till next session. The measure consists of 16 clauses. In Clause 1 it is proposed to enact that on and after Jan. 1st, 1925, no person shall be entitled to assume or use the title chemist in any part of Great Britain, without prejudice to his right to assume or use any other title mentioned in the Pharmacy Acts, unless such person shall be a chemist within the meaning of this Act, and be registered under this Act, provided that any person now entitled to describe himself as a chemist and druggist, or druggist, or pharmacist, or dispensing chemist or druggist, shall continue to be entitled to use so much of such title as does not include the word "chemist." Clause 2 states that on and after Jan. 1st, 1925, the Incorporated Society of the Institute of Chemistry shall alone possess the power to authorise any person to assume or use the title "chemist," and the Incorporated Society of the Institute of Chemistry shall from time to time appoint competent persons to conduct examinations for the purpose of granting persons permission or authorising persons to assume or use the title "chemist," and every person who shall have been examined by such examiners and shall have obtained from them a certificate of competent skill, knowledge, and qualification shall be entitled to register as a "chemist" under this Act, and no person shall conduct any examination until his appointment has been approved by the Privy Council, and such appointment and approval shall not, in any case, be in force for more than five years. Clause 3 provides that the registrar under the Pharmacy Acts shall place upon the Pharmaceutical Register (1) all persons who have satisfied the Council of the Incorporated Society of Pharmacy and Drug Store Proprietors of Great Britain, Limited (herein called the Pharmacy Society), at any time before and including the thirty-first day of December nineteen hundred and twenty-four, and being members of the Pharmacy Society, of their fitness to be placed upon the register, and (2) after the first day of January nineteen hundred and twenty-five, any person, being a member of the Pharmacy Society or not, who so satisfies the Pharmacy Society and in addition has received a certificate from a qualified medical practitioner, in the case of a person carrying on business in boroughs and urban districts, and of two qualified medical practitioners, in other places, that such person, to his or their knowledge has carried on business as a pharmaceutical proprietor on his own account for a period of not less than five years, and is personally known to such qualified medical practitioner or medical practitioners making such certificate to be a person of good repute and competent to carry on business as a pharmaceutical proprietor. Clause 4 gives to the Pharmacy Society similar powers to conduct examinations authorising persons to be placed on the Pharmaceutical Register as are given under Clause 2 to the Incorporated Society of the Institute of Chemistry. Clause 5 constitutes a Central Council consisting of 16 members, of whom four shall be appointed by the British Medical Association, four by the Incorporated Society of the Institute of Chemistry, four by the Pharmaceutical Society, and four by the Incorporated Society of Pharmacy and Drug Store Proprietors of Great Britain, Limited, together with a chairman who shall be appointed by and be a member of the Privy Council. Clause 6 provides for the holding of examinations by the Central Council biennially at London, Leeds, Birmingham, and Edinburgh. Under Clause 7 persons below the age of 21 years are prohibited from carrying on the business of pharmacy.

Clauses 8 and 9 deal with the sale of poisons. By Clause 8 it is proposed to enact that in addition to any conditions now contained in any Act of Parliament the following provisions shall have effect: (*a*) So far as regards such poisons and poisonous preparations or compounds thereof as may be sold only on the production of a medical practitioner's prescription or order, a copy of such prescription or order must be duly entered by the registered pharmacist in a special book for the purpose, and the prescription must be duly signed with the name and address and academic qualifications of such medical practitioner, and no such prescription or order shall be repeated without a further prescription or order being provided; (*b*) as regards such poisons as may be supplied by a registered pharmacist

without such prescription or order of a medical practitioner, the registered pharmacist shall only sell such poison with a printed label which shall have printed upon it the maximum pharmacopœia dose and the description of the antidote, if any, to such poison, together with the name and address of the seller of such poison; (*c*) as regards such poisonous articles as are sold for domestic or commercial purposes, not being for human consumption, such poisonous articles shall be supplied only in distinctive bottles or containers with the words "poisonous, not to be taken" legibly inscribed upon a label thereon, together with the name and address of the seller.

Clause 9 makes it unlawful for a manufacturing or wholesale chemist to supply any poison or poisonous matter, except to a person who has been duly registered and whose name is on the Pharmaceutical Register: Provided that it shall be lawful for the council of any borough or urban district to grant a license to a person requiring poisonous substances for the use or production of commercial articles only where the obtaining of such poisons does not need the authority of a qualified medical practitioner. No person shall carry on business as a wholesale or manufacturing chemist who is not or does not employ at least one person who is on the Pharmaceutical Register. Clause 10 gives power to local authorities as defined by the Act under certain circumstances to grant licenses to persons to sell non-poisonous articles mentioned in the British Pharmacopœia for a period not exceeding one year at a time. Clause 11 places the Pharmaceutical Register under the control of the Central Council. Clause 12 states that no advertisement in connexion with the sale of any medicinal article shall refer to the curative powers of such medicinal article with reference to more than three specific diseases or complaints, which three diseases or complaints must be of a similar pathological character, and no such advertisement shall be issued without the previous sanction of the said Central Council. Clause 13 is the penalty clause, and provides that any person infringing the provisions of the Act with regard to the sale of poisons shall be liable on summary conviction to a fine not exceeding £5 for every offence. The Act is not intended to apply to Ireland.

The Prorogation.

Parliament was declared by the Lord Chancellor prorogued till Monday, Jan. 30th, 1922. The Royal Assent was given to a number of Acts, including the National Health Insurance (Prolongation of Insurance) Act.

HOUSE OF LORDS.

THURSDAY, NOV. 10TH.

Hindrances to Scientific Research.

The Marquess of CREWE called attention to the hardship caused to teachers and students of science in universities and colleges by the application of the provisions of the Safeguarding of Industries Act to the apparatus and material necessary for education and research in chemistry and physics. He said that the Safeguarding of Industries Act and the German Reparations Act had exercised a distinctly hampering effect upon both research and the teaching of many branches of science. A distinguished professor of chemistry at one of the older universities wrote that there was no doubt that these Acts had had the effect of appreciably diminishing the amount of research work that could be done in the laboratory. The delay, he said, was never less than three months in the delivery of chemicals required for research. Time had to be given up to the preparation of materials for which it was not possible to wait so long. There was also delay in getting German books. Owing to the increased cost of materials some of the poorer students were known to spend on the purchase of chemicals money they ought to have spent on food.

Viscount HALDANE supported Lord Crewe in the course he had taken, and urged the Government to take steps adapted to get rid of the difficulties or to mitigate them. Professors were suffering great hardships at the present time. The other day he was told by a very competent person who had been working in the laboratories at Cambridge, which were supposed to be the best they had in this country, and in the physical laboratory in a German university, and the equipment of the German laboratory, although it had not the positive advantages of the laboratory at Cambridge, was enormously superior because it had a much better equipment.

Viscount PEEL (Minister of Transport), replying for the Government, said if the requirements of scientific and educational institutions imported from abroad were to be exempted from duty the assistance given by the Act to manufacturing industries would be diminished, and besides it would be difficult, if not impossible, to say which institutions should be given the exemption and which should not. As regarded the question of cost, the cost of the production of these things was quite small to the running and working of these laboratories. It had always been a complaint that there were very few opportunities for scientific workers in this country. Supposing this Act was a success and in four or five years' time these industries could stand by themselves, a very much wider field would be provided for scientific workers, and if scientific men would help manufacturers the development would be very much expedited. If the Act were repealed we should get back to the position we were in before the war and be dependent upon Germany and other countries for the supply of these goods. He promised to see that the whole subject was placed adequately before the Minister of Education.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 9TH.

Voluntary Hospitals Commission.

Mr. LEONARD LYLE asked the Minister of Health whether, under the terms of his departmental paper 1402, giving the terms of appointment of the Voluntary Hospitals Commission, the announcement that after the first emergency grant further grants would be only made against fresh money raised by the hospitals meant that they could not reckon, for the purposes of obtaining assistance, any ordinary revenue which they might receive in the current years; and whether, since this condition would prejudicially affect the poorer hospitals, which had practically tapped all sources of income and which now saw, at all events for the present, no further new sources of revenue in sight, he would in the interests of these poorer hospitals investigate the operation of this condition.—Sir A. MOND replied: The amount by which the income of a hospital for 1921 exceeds the income for 1920 will be reckoned as new money for the purpose of calculating the grants. In cases where the hospitals of a given area agree to combine for this purpose their aggregate income can be made the basis for calculating new money. As regards the second part of the question, I understand the King Edward's Fund are proposing to confer with the London hospitals as to the best method of raising their share of the anticipated deficit on the year's working.

Board of Control and Mental Defectives.

Mr. LESLIE SCOTT asked the Minister of Health whether his attention had been called to the circular issued last August by the Board of Control to local authorities under the Mental Deficiency Act, 1913, calling upon them to limit their expenditure under the Act next year to the total amount sanctioned for this year; whether he was aware that, even if no cases except those classed as urgent by the Board of Control were dealt with, the result of the limitation thus imposed would be to leave some 2000 urgent cases uncared for, to their own unhappiness and suffering, to the great harm of many others, and at a cost to the community in rates and taxes for police, criminal justice, and Poor-law many times as great as the cost of looking after them under the Act; and would he consider this question.—Brigadier-General COLVIN asked the Secretary to the Treasury whether the Treasury contribution to mental defectives was being withheld from many urgent and dangerous cases, with the result that they are left unrestrained and are a danger to the community; and whether admissions into institutions were limited to a prescribed number.—Sir A. MOND replied: I have seen the circular referred to. Local authorities are at present only able to deal with urgent cases, as defined by the Board of Control, provided that the expenditure involved falls within the limits of their approved estimates for 1921-22. The general question of the limitation of expenditure under the Mental Deficiency Acts necessitated by the decision of the Government that the public expenditure must be drastically reduced is receiving careful consideration, and the points mentioned in the questions will be borne in mind.

Scarlet Fever and Diphtheria in London.

Mr. GILBERT asked the Minister of Health whether his attention had been called to the increase of scarlet fever and diphtheria cases in London; whether his department had taken any action in order to control the spread of these diseases; if so, in what way; the number of cases now under treatment in hospitals; and if there were a sufficient number of hospital places for all sufferers if the epidemics spread further.—Sir A. MOND replied: The answer to the first part of the question is in the affirmative. The answer to the second part is that I have appointed a special office committee with medical representation of the London County Council and the Metropolitan Asylums Board. There are at present 6192 cases of scarlet fever and 2996 cases of diphtheria under treatment in the hospitals of the Metropolitan Asylums Board. The Board's accommodation is limited to approximately 9500 beds, but it is hoped that the arrangements which have now been made will meet the needs of the situation.

Ex-Service Men in Lunatic Asylums.

Captain LOSEBY asked the Prime Minister (1) if he was aware that treatment allowances upon which some 6000 ex-Servicemen depended were paid strictly upon the condition that these men consented to being confined in lunatic asylums, whereas the allowance was refused in respect of patients being treated, and anxious to be treated, in certain private institutions approved by the Board of Control, but to which the stigma associated with lunatic asylums was not attached; and why the allowance was not paid in the latter class of cases. (2) If, according to official figures, on Jan. 1st, 1919, 2507 ex-soldiers were confined in lunatic asylums; that the figure had risen to 4673 on Jan. 1st, 1921, and to 6435 on Oct. 27th, 1921; if he was aware that bitter laments were continually emerging from the men so confined; and if, in view of the increase in the number of men so confined, he would consider the advisability of setting up a commission comprised of Members of the Houses of Parliament to hear complaints and investigate any possible amelioration of the conditions governing the detention of these men.—Mr. MACPHERSON replied: The Lunacy Law requires that every person who is certified as insane shall be sent to an institution approved by the Board of Control; save that under certain conditions a single patient may be placed in a private house not specifically licenced for the reception of lunatics. Treatment allowances are granted and the necessary cost of treatment defrayed by my Department in respect of all certified patients whose insanity is due to war service and who are receiving treatment in institutions, whether public or private, which have been approved by the Board of Control and by the Ministry. I cannot, of course, speak for the ex-Service men in asylums, the origin of whose unfortunate condition does not entitle them to the benefits of the Royal warrant, but as regards certified "Service" patients it is certainly not accurate to suggest that any large number of complaints are received as to the conditions of their treatment. On the contrary, the number of complaints received is few, and, on investigation, they have invariably proved to have been made on unsubstantial grounds, or to have been of minor importance. When a complaint is made it is the practice for the institution to be inspected and the whole circumstances investigated by officers of my Department either alone or jointly with commissioners of the Board of Control. Perhaps I may inform my hon. friend and the House generally that under an arrangement with the Board of Control, asylums are now visited by medical inspectors of my Department and the Service patients personally interviewed. By these means I am kept in close touch with the conditions of asylums, and I do not consider that there is any ground for adopting my hon. friend's suggestion to set up a commission of the House. I may add that I do not accept my hon. friend's statement of the numbers of ex-soldiers in asylums in January, 1919, and January, 1920, as accurate. At the latter date the number of certified Service patients was approximately 6000.

Treatment of Tuberculous Ex-Service Men.

Dr. M'DONALD asked the Minister of Pensions if he would take steps to relax the order that tuberculous ex-Service men must be treated within the area of their residence, especially when greater benefits could be offered outside such area and voluntary means were available for the maintenance of the patient.—Sir A. MOND (Minister of Health) replied: So far as I am aware no such order as is referred to in the question has been issued. The institutional treatment of tuberculous ex-Service men is undertaken by the county and county borough councils, and it is within the discretion of a council acting on the advice of their tuberculosis officer to decide in what institution any particular case shall be treated, provided that the institution and the arrangements made by the council for the use of the particular institution have been approved by the Ministry of Health.

Motor Taxation.

Major BARNES asked the Minister of Transport what was the amount which had been collected up to date in motor taxation; what amount from this had been allocated to local bodies; what amount had been paid out of this to highway authorities; what amount had been allocated in loans; and, when repayments were made, what happened to the money so returned.—Mr. NEAL (Parliamentary Secretary to the Ministry of Transport) replied: The total proceeds from the motor taxation to Oct. 31st, 1921, are £10,437,997 2*s.* 6*d.* The whole of this amount, less statutory deductions, has been paid to the road fund and has been allocated to road works, and in the main to local authorities. All payments (including advances by way of loan) are made out of the road fund generally, and not out of particular collections. All sums received by way of repayment of loans or by way of interest are credited to the local fund.

Medical News.

UNIVERSITY OF LONDON.—At examinations held recently the following candidates were successful:—

THIRD (M.B., B.S.) EXAMINATION FOR MEDICAL DEGREES.

Dulcie S. Adkins, London Sch. of Med. for Women; John S. Alexander, Univ. Coll. Hosp.; Frances S. Barry (honours, distinguished in midwifery) and Geraldine M. Barry (honours, distinguished in medicine and midwifery, University medal), London Sch. of Med. for Women; George C. Berg and Percy C. Brett, St. Thomas's Hosp.; William M. Brown, Guy's Hosp.; John D. M. Cardell, St. Thomas's Hosp.; Dorothy S. Chamberlain, King's Coll. Hosp.; Cecil S. Cloake, London Hosp.; Ivy Collier, St. Mary's Hosp.; Philip N. Cook, St. Bart.'s Hosp.; Barbara Cubitt, London Sch. of Med. for Women; Charles O. Davies (honours, distinguished in forensic medicine), Liverpool University; George Day, St. Bart.'s Hosp.; Edith M. Down, London Sch. of Med. for Women; Ronald B. Green, Univ. Coll. Hosp.; Eleanor Harse, London Sch. of Med. for Women; Martin C. Hartley (honours, distinguished in forensic medicine), London Hosp.; Reginald W. P. Hosford, St. Bart.'s Hosp.; Arthur St. G. J. M. Huggett, St. Thomas's Hosp.; Bryan L. Jeaffreson, St. Bart.'s Hosp.; Marjorie M. Jefferson, Manchester University; Doris E. P. Jolly, King's Coll. Hosp.; Henry C. V. Joy (honours, distinguished in surgery), London Hosp.; Allan N. Kingsbury, Middlesex Hosp.; Anna G. M. Lewis, Univ. Coll. Hosp.; David J. A. Lewis, London Hosp.; Ivor Lewis and Kingsley W. Lewis, Univ. Coll. Hosp.; David M. Lloyd-Jones (honours, distinguished in medicine), St. Bart.'s Hosp.; Iorwerth H. Lloyd-Williams, Middlesex Hosp.; Muriel J. Lough, St. Mary's Hosp.; Alan McKenzie, Guy's Hosp.; Dorothy McNair, London Sch. of Med. for Women; John A. W. Robinson, King's Coll. Hosp.; Samuel Rose, Guy's Hosp.; Maud Sanderson (honours, distinguished in medicine) and Ruth M. Scutt, St. Mary's Hosp.; William H. Simmons, Guy's Hosp.; John E. Stacey, Sheffield University; Kathleen A. H. Sykes (honours, distinguished in surgery), Liverpool University and London Sch. of Med. for Women; Eric W. C. Thomas (honours, distinguished in forensic medicine and surgery), St. Bart.'s Hosp.; Ruth C. Townshend, Norah Tregear, and Doris L. Veale, London Sch. of Med. for Women; Gladys M. Wauhope, St. Andrews University and London Hosp.; and Keith M. C. Woodruff, Guy's Hosp.

ROYAL COLLEGE OF SURGEONS OF ENGLAND: ANNUAL MEETING OF FELLOWS AND MEMBERS.—On Nov. 17th Sir Anthony Bowlby, the President of the College, attended to preside at this meeting at 3 P.M. in the College theatre. As it was found that there were not a sufficient number present to form a quorum at 3.15 P.M. the President announced that according to the rules no meeting could take place. The President therefore retired. A protest was made by certain Fellows and Members who were present, and an informal meeting took place at which the resolutions on the agenda in favour of the admission of Members of the College to the Council of the College were passed.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—On Nov. 19th, in the absence of the President through illness, the Vice-President, Sir W. I. de C. Wheeler, distributed the prizes and medals to successful students. In his presidential address he referred to possible changes in the medical curriculum in the near future, and to the need for more practical work in proportion to mere study of books. He advised all young surgeons to travel in order to become familiar with work elsewhere.

HARVEIAN SOCIETY.—A meeting of this society will be held at the rooms of the Medical Society, Chandos-street, Cavendish-square, London, W., on Thursday, Dec. 8th, at 8.30 P.M., when a discussion on Is the Anginal Syndrome only of Cardiac Origin? will be opened by Sir John Charlton Briscoe, followed by Sir Sydney Russell-Wells, Dr. G. H. Hunt, and Sir William Willcox.

HARROGATE MEDICAL SOCIETY.—The fourth meeting of the session was held on Nov. 17th. Dr. A. Mantle presided and there was a good attendance of members. A paper dealing with the Clinical Interpretation of the Wassermann Reaction was read by Dr. F. B. Smith. The importance of the standardisation of the technique was emphasised as well as the desirability of using two antigens. Dr. Smith was of the opinion that cases of doubtful lues giving a negative W.R. should be retested after a provocative dose of an arsenical compound. The anomalies in pregnant women and infants of syphilitic mothers were discussed. Emphasis was laid on the necessity for treatment of syphilis in its earliest stage if relapses were to be avoided. Dr. Smith referred to evidence he had obtained of the thermolabile nature of the reaction in treated cases. The significance of the reaction in the cerebro-spinal fluid was described, and the paper concluded with a few details for obtaining a satisfactory specimen of serum.

CANCER HOSPITAL.—The annual dinner will take place at the Hotel Cecil on Thursday, Dec. 8th. The chair will be taken by Sir Charles Ryall. Tickets (price 35*s.* each) may be obtained from Mr. Cecil Rowntree, 9, Upper Brook-street, London, W. 1.

EPSOMIAN CLUB.—The annual meeting and dinner of the Club will take place in the Oak Room, Trocadero Restaurant, Piccadilly Circus, on Thursday, Dec. 8th: meeting at 6.15 P.M., dinner at 7.15 P.M. (10*s.* 6*d.* without wine). Dr. H. E. Haynes will take the chair. Members of the Club intending to be present will notify the hon. secretary, Dr. S. Maynard Smith, 49, Wimpole-street, London, W. 1.

MEDICO-LEGAL SOCIETY.—The annual dinner of this society will take place at the Holborn Restaurant on Wednesday, Dec. 14th, at 7.0 for 7.15 o'clock. Tickets, at 14*s.* 6*d.* (exclusive of wine), for members and guests may be obtained from the hon. secretary, Mr. Ernest Goddard, at 3, South-square, Gray's Inn, London, W.C. 1.

WESTMINSTER HOSPITAL STUDENTS' UNION: GUTHRIE SOCIETY.—The programme of meetings of this society, of which Dr. A. S. Woodwark is the president, is as follows: On Dec. 8th a Guthrie Society "Smoker" will be held; on Jan. 12th, 1922, Mr. Alfred H. Tubby will lecture on Some Experiences during the War in the Near East; Feb. 9th will be devoted to a clinical evening, when surgical cases will be shown; on March 9th Capt. A. E. Hayward Pinch will give an illustrated lecture on Radium Therapy; on March 23rd a smoking concert will be held. The meetings will be held at 8.15 P.M. in the board room of the hospital with the exception of the smoking concerts, which will take place at the medical school.

A Christmas carnival and children's fair will be held at Albert Hall from Dec. 26th to Jan. 4th, from 1.30 to 10 P.M., in aid of the following hospitals and institutions: Cheyne Hospital for Children, Church of England Waifs and Strays, City of London Maternity Hospital, East London Hospital for Children, Hospital for Sick Children, Great Ormond-street, Invalid Children's Aid Association, London Lock Hospital (Infants' and Children's Section), National Institute for the Blind, "Sunshine" Homes for Blind Children, Royal Waterloo Hospital for Women and Children, "Save the Children" Fund (British Section), Victoria Hospital for Children. Further particulars can be had from Mrs. Claremont, National Institute for the Blind, 224, Great Portland-street, London, W. 1.

THE LATE PROFESSOR DELÉPINE.—At a special meeting of the Senate of the University of Manchester held on Nov. 15th the following resolution was unanimously adopted:—

The Senate desires to express its deep sorrow at the death of Prof. Sheridan Delépine, and to place on record its high appreciation of the distinguished services he rendered to the University, and to the sciences of pathology, bacteriology, and preventive medicine. During 30 years of strenuous work as a professor of this University he firmly established the position of pathology in the medical school, he made valuable contributions to medical science, and by the unstinted labours which he devoted to the organisation and development of the public health department he conferred lasting benefit upon the community.

ROYAL MEDICAL BENEVOLENT FUND.—At the meeting of the committee held on Nov. 8th 20 cases were considered, and £262 voted to 18 applicants.

Daughter, aged 64, of M.R.C.S. Eng. who practised at Bideford and died in 1872. Applicant suffers from cerebral hæmorrhage, and a trained nurse is supplied by friends who cannot continue to help indefinitely. She lives in one room lent by a friend. Her total income is derived from a life interest in £750, which amounts to £45 per annum. Voted £10.

F.R.C.S. London and M.D. Brux., aged 49, suffers from epilepsy and is at present in St. Thomas's Hospital. Owing to indifferent health has had no practice for seven years and has taken locums when well enough. His wife's income of £50 per annum is all that they have to depend upon. Voted £26 in 12 instalments.

Widow, aged 67, of L.R.C.P. Edin. who practised in Durham and during the war served as a surgeon on board Elder Dempster Line, and was drowned in a collision crossing to France in 1917. Applicant has been living on a small legacy and £100 granted her by the Elder Dempster Line. These funds are now exhausted and she is now living on proceeds of sale of jewellery and is nearly at the end of her resources. She is willing to take a post to enable her to support herself, but finds her age against her. Rent 8*s.* 6*d.* per week for one room. Voted £18 in 12 instalments.

Daughters, aged 57 and 49, of L.S.A. who practised at Ilford and died in 1903. Owing to ill-health they are unable to support themselves. Their joint income amounts to £82. Relieved by the Fund 13 times, £171, last £18 in 12 instalments, November, 1920, jointly. Voted £18 in 12 instalments.

Widow, aged 58, of M.B. Aberd. who practised at Watlington and died in 1912. All savings were used up in expenses connected with late husband's and daughter's illness, and applicant was left without means and owing to ill-health is unable to work for a living. A sister-in-law allows her 10*s.* per week. Rent 5*s.* per week. Relieved by the Fund six times, £70. Last time November, 1920, £12 in 12 instalments. Voted £18 in 12 instalments.

Widow, aged 65, of M.D. Glasg. who practised in Downe and died in 1907. The two elder sons are married and unable to help their mother: the youngest died on active service. The War Office allows applicant a pension of 14*s.* per week. Owing to defective eyesight is now unable to earn anything by sewing, and her only other income is derived as follows: £12 10*s.* per annum from investments and 14*s.* per week from a lodger. The rent and taxes amount to £42 per annum. Relieved by Fund seven times, £64, last £12 in 12 instalments, November, 1920. Voted £12 in 12 instalments.

Widow, aged 40, of L.R.C.P. Edin. who practised in Edinburgh and died in 1916. Applicant was left with four children, with an income of about £95 per annum: the children's ages now range from 7 to 15 years and they are all at school. Apart from the £95, she received this year £7 10*s.* towards education and £48 from a lodger. Rent and rates £53 per annum. Relieved by the Fund five times, last £18 in 12 instalments, November, 1920. Voted £18 in 12 instalments.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters J. Symonds, at 11, Chandos-street, Cavendish-square, London, W. 1.

R.M.B.F., WAR EMERGENCY FUND.—A general meeting of the members of this Fund will be held at 11, Chandos-street, London, W., at 5 P.M., on Wednesday, Dec. 7th, when a report of the work of the Fund since its inception in 1916 will be presented and an outline given of the scope for its usefulness in the next few years.

MOLTENO INSTITUTE FOR RESEARCH IN PARASITOLOGY.—This institute is to be opened by Lord Buxton at Cambridge on Monday, Nov. 28th, at 3 P.M. As we have already announced, the new institute is a gift to the University of Cambridge from Mr. and Mrs. Percy A. Molteno.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.—A general meeting of this Society will be held at 122, Harley-street, London, W., on Monday, Dec. 5th, at 4 P.M., when the Place of the Colony in the Tuberculosis Scheme will be discussed.

LONDON HOMŒOPATHIC HOSPITAL.—The Countess of Plymouth presided at the Pound Day, promoted by the Ladies' Guild on Tuesday, Nov. 22nd, when the hospital benefited by the receipt of 820 lb. in goods and £107 in monetary contributions.

FOREIGN DECORATIONS.—The Cross of Chevalier of the Order of Leopold has been conferred upon Dr. S. J. Gilfillan, and the Cross of Commander of the Order of the Crown of Italy upon Dr. H. W. Kaye, for valuable services rendered by them during the war.

THE LATE DR. WILLIAM HOWARD EDWARDS.—Dr. Edwards, who died at a nursing home at Bletchingley, Surrey, on Nov. 13th, qualified M.R.C.S., L.R.C.P. Lond. in 1899, after studying medicine at Guy's Hospital, where he afterwards held a house appointment. He was a well-known medical practitioner in Streatham and the surrounding districts, and in addition to being medical officer to several insurance societies was honorary physician to the Rochester Diocesan Lodge, Brixton.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Oct. 28th. Amongst numerous specimens and cases exhibited by members Dr. Maxwell Telling and Sir Berkeley Moynihan showed a patient suffering from long-standing acholuric jaundice in whom splenectomy had been performed. Dr. Telling read a paper entitled Psychotherapy with and without Specialism. An animated discussion followed.

At a meeting held on Nov. 11th at the Leeds General Infirmary operations were performed and cases demonstrated by members of the honorary staff. This type of meeting was a new departure undertaken at the request of a number of members.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Nov. 11th at the Miller General Hospital, Greenwich, when Mr. P. B. Roth read a paper on the Treatment of Fractures. He showed X ray plates and photographs of his cases, and urged that X ray photographs in two planes should be taken when there was injury of bones and joints; screening was not sufficient. His treatment of fracture of the clavicle was a fortnight in bed, flat on the back, without a pillow. After this treatment, he said, no deformity remained, whereas Sayer's method left a deformity and sometimes a paralysis of the hand. He advised the gentle stroking advocated by Lucas-Championnière instead of ordinary massage, and said that function returned early under this treatment. Tying the wrist to the opposite side of the neck was good treatment for fractures of the upper extremity. According to Mr. Roth, the less splinting used in fractures the better. In Colles's fracture, he said, the wrist must be kept flexed. Fractures of the femur required plate and screws to prevent deformity and loss of function; simple wiring of the broken ends of a long bone was not sufficient.

THE LATE MR. WILLIAM STOKER, F.R.C.S.I.—The death of Mr. W. Stoker, senior surgeon to Jervis-street Hospital, Dublin, and senior member of the Council of the Royal College of Surgeons in Ireland, has recently taken place. Although in his seventy-ninth year he was in active work until within a few weeks of his death. Mr. Stoker received his education in Trinity College and the Royal College of Surgeons in Ireland, and was admitted a Fellow of that College in 1873. Having held the post of lecturer in surgery in the Ledwich School of Medicine from 1881 to 1889, on the amalgamation of that school with the school of the College of Surgeons, he became professor of surgery in the College, and occupied this chair until 1911. Mr. Stoker was a member of the Council of the College from 1882 until his death. In his younger professional days Mr. Stoker was a very successful private teacher, and there were few Dublin students in the 'seventies and early 'eighties who did not pass through his hands. He was held in warm regard by his professional colleagues. His death closes a family connexion with Dublin medicine lasting through three generations.

PROFESSIONAL CLASSES AID COUNCIL.—The Professional Classes War Relief Council, which rendered such valuable service to the new poor during the war, continues its activities under the new title of "The Professional Classes Aid Council." It may be recalled that during six and a half years 12,000 applications were investigated and dealt with by the Council; in the four and a half years when the Council's maternity home in Princes Gate was open 547 babies were born there, of which only two died within the first four weeks of life. The education of 885 children was assisted between November, 1914, and March, 1921, and the help continued in some cases for four or five years; the total sum expended on schooling in six and a half years was £34,000. The Music in War-time Committee of the Council found employment for several hundred musicians, whilst benefiting hospitals and other institutions where entertainments were welcomed. It is not intended that the Council as newly constituted should supplant any benevolent fund organised to deal with a particular profession. Instances, however, arise in which the Council can usefully coöperate with a body unable itself to render the precise kind of help required. Thus, assistance with school fees is still continued, being a very effective method of help. Among the professions which have been or are being assisted are included: Actors, architects and surveyors, artists, authors and journalists, barristers and solicitors, Civil servants, doctors, engineers, members of the Stock Exchange, ministers of religion, musicians, schoolmasters, teachers, and governesses. The Council prides itself on the maintenance of a scrupulous regard for the feelings of applicants. The offices of the Council are now at 251, Brompton-road, S.W. 3.

MR. EMIL COUÉ'S VISIT.—On the invitation of a committee largely composed of British medical men, Mr. Emil Coué delivered on Nov. 18th and 21st at Essex Hall, London, a series of lectures on auto-suggestion based upon his experience as founder and director of the new Nancy School of Applied Psychology. Dr. Burnett Rae, who presided on Nov. 21st, said that while the lecturer had not actually taught psychologists anything new he had impressed upon them the reality of auto-suggestion by relieving many patients, while his teaching was in no way antagonistic to the principles of medical treatment. Mr. Coué explained that he himself did not heal; he taught patients how to heal themselves. Every morning before rising, and preferably before being fully awake, the patient was taught to close his eyes and repeat quietly 20 times or so, moving the lips for emphasis, "Day by day, in all respects, I am getting better and better." The same words were repeated every night on getting into bed. The words "in all respects" made the suggestive words universally applicable. Every time physical or mental discomfort was felt the phrase was repeated. The results were sure, but confidence and faith were necessary. Giving as an illustration the ease with which a man could walk on a plank placed on the ground and the impossibility, in the majority of cases, of doing so when the plank was suspended at a height, the lecturer said that it was the imagination and not the will which permitted the ability and caused the disability; man, he said, would only cease to be a puppet when he learned to control his imagination. The essential thing in practising auto-suggestion was to keep the will from being a hindrance, for if it was not in agreement with imagination it would have the effect of reversing the desired results. The lecturer expressed the hope that the study of suggestion would be introduced into the medical curriculum, pointing out the advantage to the community if backward and mentally deficient children were treated by the method he advocated. The same methods might also be applied to the inmates of reformatories.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, Nov. 28th.

OCCASIONAL LECTURE: at 5 P.M.
Dr. Guelpa (of Paris): The Treatment of Diabetes and Gout by Disintoxication.

MEETINGS OF SECTIONS.

Monday, Nov. 28th.

ODONTOLOGY: at 8 P.M.
Casual Communication:
Mr. Stanley Mummery: A Case of Mandibular Sarcoma in an Infant.
Paper:
Mr. W. F. Broderick: The Endocrine Factor in the Production of Immunity or Susceptibility of the Teeth to Caries.
The following have promised to take part in the discussion after the paper:—Sir Arthur Keith, Dr. Leonard Williams, Sir John Bland-Sutton, and Prof. Halliburton.
Members of other Sections are invited to attend this meeting.

Thursday, Dec. 1st.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.
Specimens:
Mr. J. Ellison: (1) Squamous-celled Carcinoma of the Cervix Associated with Spheroidal-celled Carcinoma in the Body of the Uterus. (2) Unusual Case of Extra-uterine Pregnancy.
Paper:
Mr. R. H. Paramore: Eclampsia and its Incidence.

Friday, Dec. 2nd.

LARYNGOLOGY: at 4.45 P.M. (Cases at 4 P.M.)
Cases and Specimens will be shown by Mr. Mollison, Dr. Dawson, Dr. Douglas Guthrie, Mr. Howarth, Mr. E. D. D. Davies, Dr. Andrew Wylie, and others.

ANÆSTHETICS: at 8.30 P.M.
Informal Meeting: Tea, Talk, and Tobacco.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Nov. 28th.—5 P.M., Dr. Arthur Saunders: Carcinoma of the Stomach.
TUESDAY.—5 P.M., Mr. Addison: Hernia (1).
WEDNESDAY.—5 P.M., Dr. Owen. Diagnosis and Treatment of Renal Diseases.
THURSDAY, Dec. 1st.—5 P.M., Dr. Grainger Stewart: Sciatica.
FRIDAY.—5 P.M., Mr. Addison: Hernia (2).
Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Nov. 28th.—4.30 P.M., Dr. J. Bright Bannister: The Hæmorrhages of Late Pregnancy and Labour.
TUESDAY.—3.30 P.M., Dr. F. G. Crookshank: Physical Examination of the Chest—The Stethoscope.
FRIDAY, Dec. 2nd.—4.30 P.M., Mr. E. Gillespie: The Treatment of Paralytic Deformities by Orthopædic Methods.
Daily:—2.30 P.M., In-patient, Out-patient Clinics, Operations, &c.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.
MONDAY, Nov. 28th.—5.30 P.M., Lecture:—Dr. R. O. Moon: Functional Diseases of the Heart.
Daily:—10 A.M. and 2 P.M., Out-patients and In-patients.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
THURSDAY, Dec. 1st.—6 P.M., Chesterfield Lecture:—Dr. W. Knowsley Sibley: Syphilis.

BRITISH ORTHOPÆDIC ASSOCIATION.
FRIDAY, Dec. 2nd.—Annual Meeting at the Liverpool Medical Institution (President, Sir Robert Jones). 10.30 A.M., Mr. H. A. T. Fairbank will open a discussion on The Late Results of Treatment of Congenital Dislocation of the Hip.—Mr. C. Thurstan Holland: Demonstration of Radiograms of Bone and Joint Affections. 2 P.M. (at the Royal Southern Hospital), Mr. T. R. W. Armour: Demonstration of Operations and Cases.
SATURDAY.—9.30 A.M., Mr. H. Platt: *Paper:* A Series of Endosteal Tumours. Mr. R. C. Elmslie: Demonstration of Endosteal Tumours and Bone Cysts. Mr. D. McCrae Aitken:—*Paper:* Function in Relation to Repair in Bone. 2 P.M., Visits to Hospitals.

ST. MARY'S HOSPITALS POST-GRADUATE LECTURE at Whitworth-street West Branch, Manchester.
FRIDAY, Dec. 2nd.—4.30 P.M., Dr. Lacey: Backache.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Dec. 1st.—4 P.M., Lecture:—Dr. B. Shires: X Ray Appearances of Diseases of Bone.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, Nov. 29th.—4.30 P.M., Mr. H. H. Rayner: Cancer of the Breast; Early Diagnosis and Results of Treatment.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.
THURSDAY, Dec. 1st.—Dr. A. C. Magian: The Menarche and Menacme.

SALFORD ROYAL HOSPITAL.
THURSDAY, Dec. 1st.—4.30 P.M., Dr. H. A. T. Ashby: Indigestion in Infants.

UNIVERSITY OF SHEFFIELD—FACULTY OF MEDICINE. Post-Graduate Lectures and Demonstrations.
TUESDAY, Nov. 29th. (At the Royal Infirmary).—3.30 P.M., Mr. Q. Cuff: Demonstration of Gastric Cases. 4.15 P.M., Mr. G. H. Pooley: Demonstration of Cases.
FRIDAY, Dec. 2nd. (At the Royal Infirmary).—3.30 P.M., Dr. A. E. Barnes: Demonstration of Cases. 4.15 P.M., Mr. D. S. Kerr: Demonstration of Cases.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.
A Course of Eight Lectures and Discussions on Problems of Public Health in Relation to Industrial Hygiene at the Lecture Theatre of the Institute.
WEDNESDAY, Nov. 30th.—4 P.M., Lecture VII.:—Prof. E. L. Collis: Health and Welfare in the Coal Mining Industry.

Appointments.

ADDIS, W. R., M.B., Ch.B. Edin., has been appointed Honorary Assistant Gynecologist to the Salford Royal Hospital.

JACKSON, C. E. S., M.B., B.S.Lond., F.R.C.S.E., to be an additional Medical Referee under the Workmen's Compensation Act for County Court Circuit No. 32 (King's Lynn, &c.).

Albert Dock Hospital of the Seamen's Hospital Society.—GRIFFITHS, H. E., M.S. Lond., F.R.C.S. Eng., and KILNER, T. P., F.R.C.S. Eng., Surgeons.

Queen Charlotte's Lying-in Hospital.—GRIFFITHS, A. MURIEL, M.B., B.S. Lond., Senior Resident Medical Officer; HALL, EDITH M., M.B., B.S. Lond., Assistant Resident Medical Officer; RAMSAY, M. OLIVE, M.B., B.S. Lond., District Resident Medical Officer.

Certifying Surgeons under the Factory and Workshop Acts: HART, J. H., L.R.C.P., M.R.C.S. (Purfleet); MCCLYMONT, J., M.D.Edin. (Waltham Abbey).

Vacancies.

For further information refer to the advertisement columns.

Altrincham General Hospital.—H.S. £175.
Bethnal Green Hospital.—Asst. M.O. £400.
Birmingham and Midland Eye Hospital.—Asst. S. £100.
Birmingham General Hospital.—Two H.S.'s. £125 and £100.
Bradford City.—Asst. Bacteriologist. £600.
Bradford City Municipal General Hospital.—H.P. and H.S. Each £350.
Bridgend, Glamorgan County Asylum.—Jun. Asst. M.O. £415.
Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £150.
Brighton, Royal Sussex County Hospital.—H.S. £140.
Bury Infirmary.—Jun. H.S. £150.
Cambridge, Addenbrooke's Hospital.—H.P. £130.
Cardiff, King Edward VII. Hospital.—H.S. £200. Also H.P.
Cheadle, Cheshire, Cheadle Royal.—Asst. M.O.
Derby, Royal Derby and Derbyshire Nursing, &c., Association.—Two Hon. Obstet. Phys.
Derbyshire County Council.—Asst. Sch. M.O. and Asst. Tuberc. O. £600.
Dumfries, Crichton Mental Hospital.—Clin. Path. £400.
Durban, Government Hospital.—Med. Supt. £1050.
Durham, Richard Murray Hospital, Blackhill.—Res. M.O. £400.
Frimley, Burrow Hill Sanatorium, &c.—Res. Med. Supt. £600.
Fulham Parish Infirmary, St. Dunstan's-road, Hammersmith.—Third Asst. M.O. £300.
General Lying-in Hospital, Lambeth.—Res. M.O. £100.
Greenwich, Dreadnought Hospital.—H.S. £150.
Guildford, Royal Surrey County Hospital.—H.S. £150.
Hove Hospital.—Res. M.O. £250.
Iraq.—Two M.O.'s. 600 to 1000 rupees per mensem.
Lincoln County Hospital.—Jun. H.S. £150.
London Homœopathic Hospital, Great Ormond-street.—Third Anæsth. £50.
London Hospital, Mile End.—Asst. S.
London Temperance Hospital, Hampstead-road.—Res. Cas. O. £150.
Manchester Royal Infirmary.—Asst. M.O. and Asst. Surg. O. Each £35.
Manchester, Salford Royal Hospital.—Hon. Asst. Radiologist.
Middlesex Hospital.—Asst. Radiologists and Asst. Electro-Physio-Therapeutist. £200 each.
Newport, Mon., Royal Gwent Hospital.—H.S. £200.
Norwood Cottage Hospital.—Two vacancies on Hon. Med. Staff.
Nottingham Children's Hospital.—Female Res. H.S. £180.
Oldham Royal Infirmary.—Three H.S.'s. Each £200.
Prince of Wales's General Hospital, Tottenham.—Hon. Surg. Reg. £100.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Rochester, St. Bartholomew's Hospital.—Res. H.P. £200.
Royal Free Hospital, Gray's Inn-road, W.C.—H.S. and Sen. Obstet. Asst. Clin. Assts.
Royal National Orthopædic Hospital, Great Portland-street.—H.S. £150.
Royal Naval Medical Service.—Surg. Lieuts.
Royal Waterloo Hospital for Children and Women, Waterloo-road. H.P. £100.
Shanghai Municipal Council.—Asst. Health Officer. £1540.
Sheffield, Jessop Hospital for Women.—Asst. H.S. £100.
Sheffield Royal Infirmary.—H.P. and Asst. Cas. O. £150.
South-Eastern Hospital for Children, Sydenham.—Res. M.O. £100.
South Mimms, Clare Hall Sanatorium.—Asst. M.O. £350.
Southport General Infirmary.—Jun. H.S. £175.
Sunderland, Children's Hospital.—Female Jun. Res. M.O. £150.
Ventnor, Royal National Hospital for Consumption.—Asst. Res. M.O. £300.
Walsall Education Committee.—School Med. Insp. £500.
Warrington, Lancashire County Asylum, Winwick.—Asst. M.O. £300.
West London Hospital, Hammersmith-road.—Two H.P.'s and one H.S. Each £100.
West Riding County Council.—School Oculist. £600.
Willesden Hospital, Harlesden-road.—Hon. Anæsth. and two Hon. Dent. Surgs.
Worcester County and City Mental Hospital.—Sen. Asst. M.O. £500.

The Chief Inspector of Factories, Home Office, S.W., announces the following vacant appointments: Newton Abbot (Devon), and Cardigan.

The Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act for the Preston and Chorley and Lancaster County Courts. Applications should reach the Private Secretary, Home Office, not later than the 14th December.

Births, Marriages, and Deaths.

BIRTHS.

BRADFIELD.—On November 1st, at Moorats Gardens, Madras, the wife of Major E. W. C. Bradfield, I.M.S., of a daughter.

EDEN.—On Nov. 14th, at a nursing home, Edgbaston, the wife of Geoffrey Eden, M.D., M.R.C.P., of a son.

MATTHEWS.—On Nov. 19th, at Eversfield-place, St. Leonards-on-Sea, the wife of L. Clive Matthews, L.D.S. R.C.S.Eng., of a son.

MARRIAGES.

FINDLAY—DAY.—On Nov. 17th, at the Church of the English Martyrs, Streatham, S.W., John Findlay, M.D., D.P.H., to Winifred Marie, youngest daughter of Mr. John T. and Mrs. Day, Hayeswood, Streatham Park, S.W.

YOUNG—GOULD-TAYLOR.—On Nov. 11th, at Consulate, Port Said, and Nov. 12th, at St. Andrew's Church, Cairo, Peter Hutchison Young, M.B., Ch.B., R.A.F. Medical Service, to Sheila, younger daughter of the late Rev. N. Gould-Taylor and Mrs. Gould-Taylor, Melbourne, Australia.

DEATHS.

LE QUESNE.—On Nov. 18th, at Southampton, Claude Philip Le Quesne, M.R.C.S., L.R.C.P., aged 55 years.

MERRALL.—On Nov. 16th, at 26, North Promenade, St. Annes-on-the-Sea, Mary Topping, the beloved wife of Harry Merrall, M.B.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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KNOWLEDGE AND UNDERSTANDING.[1]

BY W. D. HALLIBURTON, M.D. LOND., F.R.S.,
PROFESSOR OF PHYSIOLOGY, KING'S COLLEGE, LONDON.

THE question, "What is Truth?" is likely to remain unanswered for many generations to come, if not for ever. Within the last year or two it has acquired new meaning in the discussions which have centred around the question of relativity so prominently brought before the scientific world by the researches of Einstein. I have not the special mathematical knowledge to pronounce judgment on Einstein's work; but so far as an outsider has been able to grasp its significance one may briefly say that it has been found that the old Newtonian laws regarding gravitation and the propagation of light have been found not immutable or even absolutely correct in detail, but are only relatively true at a given time in certain conditions of space. In the light of uncertainty regarding the fundamental laws of the physical universe, who can hope, in branches of science dealing with living things, to attain to perfect knowledge? The seekers after truth need not be discouraged, for they will often be rewarded with sufficient understanding to grasp some of its meaning and even to apply the latter to the good of mankind.

Astronomy and Chemistry.

The old laws of the physical world may not be flawless, but they have enabled astronomers to foretell eclipses with exactitude, to give us the Nautical Almanac with accurate information about the tides and numberless other data, to detect the existence and predict the appearance of new planets, and numerous other feats. In chemistry, the atomic theory is, I suppose, only relatively true. Certainly no one has ever seen an atom, still less the electrons which make up the atoms; nevertheless, such theories have played an overwhelmingly useful rôle in the progress of chemistry and physics; witness, for example, the prediction of the discovery of new elements, and the invention of new methods in the application of radiant energy for the alleviation of suffering.

Physiology and Medicine.

Coming now to the biological sciences, I shall feel more at home when I single out physiology for comment. The relationship of physiology to medicine is one on which I am never tired of dilating. I remember a time which succeeded that when anatomy and physiology were taught by the same professor, when physiology was regarded almost as an ornamental extra in most schools—being taught by a lecturer who was not a trained physiologist and had no idea of research—and when the physiological laboratory was all but non-existent. With the foundation of laboratories the professed physiologist came into being and by diligent work made discovery after discovery. But with a few brilliant exceptions the clinical observer and the laboratory worker seldom came together, and both physiology and medicine suffered in consequence. From this state of things we are now emerging; physicians are beginning to recognise that physiology is the corner-stone of medicine, and that medicine is or ought to be applied physiology. I look forward to a time when clinical teachers will, as a result of laboratory training and experience, have grasped the spirit of research and be able to teach medicine in this spirit of understanding. I do not say we have not such teachers now, but the future will, I am sure, give us many more.

Empiricism in Medicine.

Medicine is often wrongly reproached for its empiricism, but empiricism is the result of past experience. The reproach is only deserved when medical men elect that their studies shall remain empirical and do not discover causes and reasons. Take, as examples, some morsels of dietetic advice which are often heard from practitioners. (1) In a case of malnutrition take more fat, but preferably in the form of cream or cod-liver oil instead of olive oil or margarine; (2) in a case of high blood pressure abstain from the red meats, but take fish and poultry; (3) in a case of obesity take toast, but not bread, and reserve drink till the end of the meal.

The physiological explanation of the first piece of advice is now known, for the useful fats are those which contain the recently discovered essential accessory factor or vitamin. Time may show that the second and third are justifiable; some little thing, quantitatively small, but qualitatively all-important, may yet be found to constitute the difference between harmful and useful foods. When such a happy time arrives, when the doctor can give physiological reasons for the faith that is in him, shall we even then be nearer the absolute truth. We may have by then advanced a few steps, but that does not mean we should hesitate to push on. Increase of understanding at least will follow, and with it decrease of suffering and disease.

Enzymes.

We hear a great deal about the activity of enzymes or ferments. It is immaterial that a ferment may be an actual entity or a special phase of matter; ferment action is the great mechanism in the chemical and metabolic activity of the body. This fact is indisputable, although no physiologist has ever seen an enzyme in a state of purity, just as no chemist ever saw an atom, and recently acquired knowledge of the whole subject of immunology is in the same position. We talk glibly of antitoxins, agglutinins, precipitins, opsonins, anaphylactins, hæmolysins—names which are merely the result of a desire to crystallise theories in terms of speech. Such excursions of the imagination may not come into the domain of exact knowledge, but they have led to understanding of such an operation as vaccination—a purely empirical procedure in Edward Jenner's day—and have enabled practical men to devise corresponding means for the prevention or cure of other diseases.

Vitamins.

To turn to a subject already alluded to—namely, the vitamins. Hopkins compared them to the nails and cement in the building of a house; McCarrison compared them to the spark which makes the energy of the fuel effective in a motor-car. Such similes do not add to our knowledge, but they help our understanding; the vitamins are still unknown chemically, but has their study been useless? From the imperfect knowledge at present available immense benefit to mankind has already ensued in the matters of properly balanced diets and of the deficiency diseases in which absence of vitamins plays so important an ætiological rôle.

Permeability.

We owe to physiology many other conceptions beside those of enzymes and vitamins which have profoundly influenced all branches of medicine. Physical chemistry, for example, in physiological hands is one of these. A study of such questions as colloids, surface-tension, and permeability is not only of intense interest in itself but has done much of recent years to place the phenomena of life on an intelligible basis. From the wide field here opened up I will content myself with one example—namely, permeability, a subject to which my friend, Prof. H. J. Hamburger, of Groningen, has devoted a life of research. He began with red blood corpuscles, and then passed on to a study of secreting cells. The usual way of explaining the action of a secreting cell is to say that it has a selective action; on one side it is bathed with a nutrient fluid originating from the blood. At its opposite border it pours out a new fluid, we will say saliva. The statement that the cell selects from the lymph certain materials and rejects others implies that the cell has something akin to consciousness and choice, a vitalistic view which cannot commend itself to any lover of exact science. The passage of substances through cells and their membranes is regulated by various physical forces, such as filtration, diffusion, and osmosis, but these alone will not explain all the facts; the subterfuge introduced by the assumption of vital or selective activity is a mere confession of ignorance. Investigation of the permeability of the protoplasmic surface and its membrane has done much to enlighten that ignorance; the cell is permeable to some substances and not to others; it has no real choice as to what shall pass and what it prevents from passing. It has been proved further that different ions modify in various directions the normal permeability; hence the electric charge of the ions must be an important factor in determining the passage of substances through the cell and its plasmatic membrane. In diseased conditions the normal relationships in the ionic balance is upset and cellular activity becomes abnormal. Electric charge is one factor, molecular size is possibly another, solution affinities, surface-tension, &c., are others. Without attempting a description of all of these, suffice it to say that they are in the region of exact research and measurement.

Permeability of Cells to Sugar.

Such considerations may be amplified by a brief allusion of what is known in relation to the permeability of cells to sugar. The sugar of the blood is glucose (dextrose); it is always present in health, but is then entirely contained in the blood plasma; the corpuscles are impermeable to this variety of sugar except in that pathological state we call diabetes, where the normal permeability is deranged. That

[1] Being the substance of an inaugural address delivered before the Midland Medical Society, Birmingham, on Nov. 2nd, 1921.

this is not governed by the mere size of the glucose molecule is evident when we go to the kidney, for in health the renal cells are also impermeable to glucose, and it is not until normal conditions are upset in diabetes that the kidney cells allow this sugar to pass into the urine. Nevertheless, sugars with larger molecules, such as cane sugar or lactose, if introduced into the blood stream find their way out into the urine even in health. The sieve theory will thus not hold here, so recourse must be had to the "lock and key" hypothesis introduced by Emil Fischer to help us to understand the specific action of enzymes, and which has proved so useful also when one has to deal with questions of specificity in antitoxic and analogous phenomena. The chemical configuration of sucrose is such that it fits the molecular structure of the parts of the cell it penetrates; it can unlock the door and get through; glucose has a different configuration; it cannot open the door so long as the barrier or lock remains healthy. I have taken this to illustrate one of the many features of physiological advance in knowledge, which is of intimate importance to pathology, but even here, after a certain point it is necessary to have recourse to a theory or a useful simile.

Hormones.

There are many other examples of physiological advance I am tempted to press upon you, but I will be content with only one more—that of the chemical messengers or hormones, of which the discovery has been of incalculable benefit to the practitioner. Organs formerly mysterious are now opened books, and the part played by the substances they pour into the blood to minister to parts elsewhere has shed a light on many obscure maladies, as well as on the processes of the healthy body. It is true we have a general conception of the way the endocrine organs work and of what happens when the work is badly done, but up to the present there are only two of these hormones which are known to us in the true chemical sense—to wit, adrenaline, the secretion of the suprarenal medulla, and thyroxin, the iodine complex secreted by the thyroid. True, the discovery of adrenaline was no mean feat and has provided us with a useful drug. When the internal secretion of the adrenal cortex is discovered one may anticipate rational and successful treatment of Addison's disease.

It is necessary to blend newly acquired knowledge with the saving virtue of common-sense. The premature assumption of the truth of various theories is not only inimical to the progress of the science of medicine but may be an actual danger to the community of patients. What cruelly false hopes were raised in the breasts of sufferers when, in the early days of radiology, radium was vaunted as the cure for all or nearly all of our ills, cancer included.

Psycho-Analysis and Spiritualism.

This special evil of the unwisdom of accepting unproved theories, or partially tested cures, is most pronounced when one has to deal with a subject on which our knowledge is scantiest—namely, the action of the mind. I have neither friends nor enemies among the psycho-analysts, so that what I am saying now is entirely impersonal. When speaking of psycho-analysis to medical men I have sometimes been answered in this way. "After all, there are some good psycho-analysts; Dr. So-and-So, for example, gains the confidence of his patients, gives them good advice, and comforts them; he even knows a little neurology." Is not this damning him with faint praise? Any good doctor, psycho-analyst or not, can win, or should win, his patients' confidence and thus benefit them.

Whatever view one may hold as to the value of psycho-analysis in the treatment of so-called functional disorders, there can be no difference of opinion that any attempt to attack organic disease by its agency should at once be authoritatively condemned. Yet I see in an American journal of repute an attempt in this direction on the part of a qualified doctor of medicine; he proposes that multiple sclerosis should be so treated. At first one took the article to be satirical, but it is quite evident that it is intended seriously. In all ages we see at intervals instances of charlatanism making inroads into the region of exact knowledge and delaying its progress. The war has been blamed for present tendencies in this direction; the war may have exacerbated the condition of mental unrest, but did not cause it. To condemn spiritualism with its many ramifications as a delusion or as humbug, and its professors as deceivers or deceived, may be correct, but it is not argument. I should like to see the appointment of a responsible committee made up of physiologists, medical men, physicists, professional conjurers, the spiritualists themselves, together with a certain number of unbiassed public men gifted with common-sense, to investigate it by the cold light of exact experiment, and to report upon the claims of the occultists. As the matter stands at present, the practices of believers in the supernatural can only exaggerate the mental unrest to which I have alluded; moreover, if the statements of one party are ignored, many will conclude that the other side has nothing to say—as they concluded in the anti-vivisection controversy.

In conclusion, progress in the scientific foundation of medicine depends on accurate observation, experiment, and reasoning combined with imagination which must not be unbridled. True knowledge and understanding suffer from the absence of one or more of these essential attributes of progress. To recognise and guard against the pitfalls of half-knowledge is the only way to avoid them.

INSTITUTIONAL CONVALESCENCE.

IN a pamphlet entitled "Convalescent Care for an American City of One Million Population" and reprinted by permission of the Cleveland Hospital Council, Dr. Frederic Brush (Medical Director, the Burke Foundation, White Plains, N.Y.) sets forth a scheme for utilisation of that period of convalescent when recuperative rest may be favourably combined with mental and moral rehabilitation of the patient. Dr. Brush begins with the statement that the patient's home is usually the best place for convalescence, but that institutional accommodation is necessary in a proportion of cases; this proportion he sets at 10 per cent. of all hospital cases, with an additional fifth of that 10 per cent. to include patients from dispensaries and other sources. Assuming the city in question to present fair living conditions, a figure of 5000 hospital patients, plus 1000 from other sources, is taken as a planning basis. The average stay in American convalescent homes has been proved to be about 21 days; thus the 6000 patients require 350 beds.

Allotment of Beds.

An estimate based upon the experience of the institutions in great cities apportions beds as follows: (1) In a main institution for adult men and women of all ages from 15 upwards, 120 beds, including 15 per cent. or more cases of heart disease, together with cases undergoing preventive treatment, standard surgical cases requiring dressings, and cases of "chronic handicapped" convalescence; (2) in a children's home, 100 beds, for girls aged 6–15, and boys aged 6–10, including orthopædic and surgical dressing cases, and heart disease up to 20 per cent. of the total, with the above-named "standard lines" in addition; (3) in a boy's place, 30 beds, for ages 10–15, with disease classification as in the children's home; (4) in a section for mothers with infants and young children, 30 adult beds, averaging 60 patients; (5) in a special heart institution, for the seriously-ill but probably restorable cases, 40 beds, for ages and sexes as in the children's home.

The Cost of Housing.

New or expensive buildings are described as inessential. An old mansion, a large farmhouse with out-buildings, or a disused hotel may readily be adapted. Tents will serve on occasion; extensions are easily made and much equipment may be improvised. Five acres of land is the minimum. The various homes might occupy one large plot of 100 acres if the necessary separation of patients could be ensured. A site within 20 miles of the centre of the city is desirable for purposes of transport, coöperation of staff, &c. A daily cost of $1·75 to $2·00 per head might be expected, giving approximately $225,000 as a minimum yearly working cost for the 350 beds, including transport and maintenance of a city admission office. The selection of patients would be performed by one (possibly part-time) city officer, and the necessary work of following up of cases, including vocational and occupational direction, might be done by the city organisations which sent patients.

Some Details.

Dr. Brush explains that preventive tuberculosis, convalescent orthopædics, and bone diseases are included under (1), (2), and (3) above; that cardiac children well enough for reconstructive graduated exercise treatment are provided for under numbers (2) and (3); that adolescents (the group most successfully dealt with and yet most neglected in convalescence) are especially considered.

"As interest grows," he writes, "and convalescent experience matures, the extensions of this service . . . . will probably be towards separate provision for orthopædics, pay convalescents, the coloured, and for the various border-line, nervous, and mental patients, who everywhere lack long-term preventive and convalescent opportunity."

"Prevention, education, refinement, and Americanisation, occupational adjustment, vocational direction, re-encouragement," are stated to be the objects of Dr. Brush's system. "Such an institution . . . . would serve to stimulate medical study of convalescence, now a field much neglected, and would promote throughout the community interest in the problem of convalescence which will add to the efficiency of all kinds of medical care in hospitals, dispensaries, and in the home."

QUEENSLAND HOSPITALS FOR THE INSANE.

THE general report of the Inspector of Asylums for 1920 contains the following details of the mental hospitals and reception houses in the State. On Jan. 1st, 1920, there were 1738 males, 981 females, total 2719 persons certified as insane in the State. During the year 318 males and 180 females were admitted into the mental hospitals, of whom 265 males and 141 females were admitted for the first time, while 53 males and 39 females, or 18·47 per cent., were re-admissions, as compared with 18·57 per cent. during the previous year. From the mental hospitals 145 patients were discharged recovered, and from the reception houses 41. The recovery-rate was 49·16 males, 54·73 females, 51·99 total per cent. for all the mental hospitals and reception houses in the State. This result is extremely satisfactory, for a number of recoveries take place in the mental ward of the Brisbane General Hospital of mental cases that have not been certified, and therefore are not included in the above figures. In addition to those discharged recovered, 19 males and 9 females were discharged to the care of their friends and relatives relieved or not improved. During the year, 129 males and 65 females died in the mental hospitals and reception houses, the death-rate being 7·40 males, 6·69 females, total 7·15 per cent. of the average numbers resident.

The numbers remaining in all the mental hospitals and reception houses at the end of the year were 1746 males, 951 females, total 2697, in addition to whom 26 males and 40 females were out on leave of absence; so that there were 1772 males, 992 females, total 2764, on the books certified as insane in the State. These figures show an increase of 34 males, 10 females, total 44 on those of the previous year. The proportion of the insane in 1920 was 3·74 per 1000 of the population (males 4·61, females 2·79).

The lectures, demonstrations, and practice papers have been given to the nurses and attendants during the past year at all three mental hospitals in accordance with the regulations laid down by the State Nurses' Registration Board. The nursing staffs at the three mental hospitals at present are: Goodna, 132 attendants, 96 nurses; Toowoomba, 64 attendants, 85 nurses; Ipswich, 57 attendants, 48 nurses; making a nursing staff total of 482.

AN OUTLINE OF SCIENCE.

Messrs. George Newnes are bringing out in fortnightly parts an "Outline of Science," edited by Prof. J. Arthur Thomson, following on the lines of Mr. H. G. Wells's well-known outline of universal history. The general aim of the Outline is to help the reader to get a clear and concise view of the state of present-day science in order that he may be able to follow with intelligence the modern advances and to share appreciatively in man's continued conquest of his kingdom. To middle-aged and middle-aging people who keep in the running of domestic affairs and politics it will come as a surprise to see how the discoveries of men like J. J. Thomson, Ernest Rutherford, and Frederick Soddy have made archaic their childhood's conception of dead or inert matter. The electron theory is, indeed, only just beginning to show us what electric phenomena actually mean. Similarly, the discovery of hormones at the hands of men like Starling and Bayliss is changing the whole face of physiology. If Prof. Thomson succeeds in bringing home to a large circle of readers a lively knowledge of these things he will have performed a great service to his generation. Part I. contains the Romance of the Heavens and the beginning of the Story of Evolution. The illustrations are striking and on the whole well chosen, although the photographs of planets are curiously woolly, and it is difficult to think of a view-point in space to justify the pictorial representation of the solar system on p. 16. Such popularisation of science is in harmony with the effort of the Selborne Society, to which Mr. W. M. Webb, F.L.S., calls attention in a following letter.

THE SELBORNE SOCIETY AND CINEMATOGRAPHY.

To the Editor of THE LANCET.

SIR,—In a letter which I wrote during the summer I mentioned that the Selborne Society was interesting itself in cinematography. The time has evidently come when an endeavour should be made to take advantage once more of what we may call non-theatrical films. There are many matters in connexion with science generally and natural history in particular, with customs, history, and travel which interest a large proportion of the public. The Society is beginning by introducing films into its extension lectures, one of which, with the help of travelling motor lorries carrying projection apparatus, can now be given anywhere in the country. It is forming a cinematography committee with the object of introducing more films of the sort which we have described into the cinema halls, to arrange entertainments where theatrical films are in the minority, to build up a film library, and, when prices of apparatus and films allow, to introduce the cinematograph into the ordinary curriculum of schools.

Sir George Aston and Sir Gilbert Parker have signified their intention of joining the committee, which already includes the following: Lieut.-Colonel E. S. Amery, M.P., Sir W. Watson Cheyne, M.P., Capt. W. E. Elliott, M.P., Mr. Joseph Hood, M.P., Mr. R. B. Frere, Sir Sidney Low, Mr. Oswald Mosley, M.P., Mr. Leslie Scott, K.C., M.P., Sir Ernest Wild, K.C., M.P.

I hope that any of your readers who are able to help in any way will communicate with me.

I am, Sir, yours faithfully,
WILFRED MARK WEBB, F.L.S.

The Hermitage, Hanwell, W. 7, Nov. 19th, 1921.

AN ANCIENT SCOTTISH HAIR-CAST.

To the Editor of THE LANCET.

SIR,—Mr. Alfred Ela, of Boston, U.S.A., has written calling my attention to an omission from the bibliography of my article on Hair-Casts which appeared in THE LANCET of Oct. 15th. Mr. Ela's contribution was to the *Boston Medical and Surgical Journal* in March, 1918, and ran as follows:—

"... Review in *Archeological Journal*, 1916, lxxii., 402, of Banff Charters, A.D. 1232–1703, viz., Oct. 9th, 1232, lands 'were granted to Master Neis, the King's Physician, by Alexander II.'; Neis 'is reported to have obtained this reward for the service of cutting a hair-ball from his royal master's heart.' While the service seems shadowy, the fee was substantial."

I am, Sir, yours faithfully,
IVOR J. DAVIES.

Cardiff, Nov. 9th, 1921.

CYNOTHERAPY.

To the Editor of THE LANCET.

SIR,—In reply to Dr. W. J. Rutherford (THE LANCET, Nov. 12th, p. 1038) I enclose a recipe for dog oil copied from Pharmacopœia Londinensis, date 1659, by "Nich. Culpeper, Gent., Student in Physick and Astrology." The book contains the name of an old owner thereof, thus: "Peter Reid, Senor. His book. Trafalger."

I am, Sir, yours faithfully,
VERE G. WEBB, M.R.C.P.I.

Haverstock-hill, N.W., Nov. 16th, 1921.

Enclosure.

OLEUM CATELLORIUM 146, OR, OIL OF WHELPS.

Colledg.—Take of Sallet oyl four pound, two Puppy dogs newly whelped, Earth worms washed in white wine one pound; boyl the whelps till they fall in pieces, then put in the worms, a while after strain it, then with three ounces of Cypress, Turpentine, and one ounce of Spirit of Wine perfect the oyl according to art.

Culpeper.—It is excellent good to bath those Limbs and Muscles that have been weakened by wounds or bruises.

THE LATE COLONEL A. B. R. MYERS'S AUTOPHLEBOTOMY.

To the Editor of THE LANCET.

SIR,—In your obituary notice (August 13th) of the late Colonel Myers no mention is made of his authorship of "Life with the Hamran Arabs"—an interesting book describing a sporting trip in the Soudan in the year 1875. It contains an incident of particular medical interest—viz., the performance of autophlebotomy (pp. 282–3). Having been prostrated with intense headache and nausea for several days as a result of sunstroke, he thought that blood-letting would do him good. As he had no European companion present at the time to perform the operation he was obliged to do it himself. He first opened a vein in his left arm, but this was ineffectual; he then did the same in the right arm and was successful in causing a flow of 8 oz. of blood. This caused some immediate faintness but procured the desired relief. In bygone days, when venesection was practised frequently and was better understood than it is now, the performance of it by a medical man on his own *corpus vile* may have happened occasionally, but I think that it must be very uncommon. I cannot remember any case recorded in literature.

I am, Sir, yours faithfully,
F. LUCAS BENHAM, M.D., M.R.C.P.

Exeter, South Australia, Oct. 5th, 1921.

PUBLIC HEALTH IN HONG-KONG.

A REPORT for the year 1919, prepared by Mr. A. G. M. Fletcher, Colonial-Secretary, estimates the total civil population at 598,100, including 13,600 non-Chinese. The birth-rate for the year was 3·9 per 1000 among the Chinese community and 20·6 per 1000 among the non-Chinese, as compared with 3·6 and 22·1 in 1918. The death-rate was 23·3 per 1000 among the Chinese and 19·9 among the non-Chinese, as against 29·6 and 19·5 in the previous year. The number of deaths from malaria (319) showed a decrease. In the City of Victoria the deaths of Chinese from this cause numbered 101 out of a population of 320,080, or a rate of 0·3 per 1000 per annum. The deaths from plague numbered 426, as compared with 251 in 1918. Small-pox deaths numbered 15, all Chinese.

There were 3049 deaths from respiratory diseases, and 1545 from various forms of tuberculosis. Beri-beri was responsible for 555 deaths, as compared with 804 in 1918 and 654 in 1917. During the past few years circulars have been distributed to all large employers of coolie labour calling their attention to the fact that beri-beri is produced by the consumption of white rice as the staple article of diet without a sufficiency of other foods, and advising that beans should be supplied with the rice when fresh meat or fresh fish cannot be afforded.

Government hospitals consist of the Civil Hospital, to which is attached an isolated maternity hospital, the Victoria Hospital for Women and Children, and the Kennedy Town Infectious Diseases Hospital. There is an observation station capable of accommodating 1500 persons in the event of an outbreak of infectious disease on board a ship arriving in the harbour. In the Civil Hospital, which contains 166 beds in 20 wards, 3926 in-patients and 22,446 out-patients were treated during 1919; 218 cases of malarial fever were admitted; 460 confinements occurred during the year in the Maternity Hospital, which contains 12 beds for Europeans and four for Asiatics; 54 infectious cases were treated at the Kennedy Town Hospital. In the Lunatic Asylum 207 patients of all races were treated, and there were eight deaths. The Tung Wa Hospital, which is mainly supported by the voluntary subscriptions of Chinese, receives an annual grant from the Government. Only Chinese are treated in this institution, which performs other services as well as those appertaining to a hospital, such as the free burial of the poor, the repatriation of destitutes, and the organisation of charitable relief in emergencies. Chinese as well as European methods of treatment are employed in accordance with the wishes expressed by the patients or their friends. About half the number are now treated by Western methods. The hospital is managed by a committee of Chinese, who are annually elected. It is under the supervision of a visiting physician, who is a member of the medical department, whilst two Chinese house surgeons, trained in Western medicine, are members of the hospital staff. There are 323 beds in the buildings, and 7002 patients were accommodated during 1919. The Tung Wa also maintains a branch hospital for small-pox cases (Chinese only). It contains 58 beds, and during 1919 four cases were treated.

The Alice Memorial and Affiliated Hospitals are managed and controlled by the missionaries resident in Hong-Kong, agents of the London Missionary Society. The number of in-patients in 1919 was 1395. To avoid the complete seclusion from friends and relatives which removal of Chinese plague patients to the Kennedy Town Infectious Hospital entailed, four District Plague Hospitals are maintained by the Chinese in various parts of the colony. The new Kwong Wa Hospital for Chinese in the Kowloon Peninsula was opened in 1911. There are 70 beds, and 3313 patients were accommodated during 1919.

The University of Hong-Kong is an institution that arose from the joint enterprise of British and Chinese subscribers. At the end of 1919 the number of students was 225, of whom 75 were taking the medicine course. The idea of the University is to provide, close to China, education similar to that given in the British universities, but at a much cheaper cost. The medical faculty offers ample facilities for the practice of medicine. The medical laboratories were the gifts of various Hong-Kong Chinese residents. There is a large staff of instructors in medicine, and all the principal medical practitioners in Hong-Kong give lectures at the University. Clinical work is carried on at the Government Civil and Tung Wa Hospitals. The degrees are recognised for registration in Great Britain by the General Medical Council. The University insists upon all students having a proper knowledge of their own language, although instruction at the University is carried out in English.

The mean temperature for the year 1919 was 72·2° F., as against 71·2° in 1918, and 71·8° for the past 36 years. The total rainfall for the year was 76·140 inches, as against 101·605 inches in 1918, and 83·620 inches for the past 36 years. The climate of Hong-Kong is similar in its broad features to that of Kowloon and the New Territories, but at the higher levels, from 1400 to 1800 feet above sea-level, the temperature is usually from 3° to 6° lower than at the Observatory, Kowloon. The humidity is usually greater than in Kowloon, and approaches saturation for several days at a time during March and April, when mist is very prevalent. In summer the City of Victoria and the rising terraces behind it derive little or no benefit from the south-west monsoon, being sheltered by steep hills from S.E. to S.W. In winter it is exposed to the north-east monsoon, which occasionally blows along the harbour, through Lyemun Pass, with considerable violence. On the other hand, the south-west side of the island is protected from the north-east monsoon in winter, and enjoys the benefit of the south-west monsoon in summer.

EXCESSIVE PRESCRIBING.

A PRACTITIONER was recently asked by his panel committee to justify two prescriptions each containing 6 oz. of Stokes's liniment (Lin. album). His chief concern was the unreasonable cost of this prescription, which was charged at 9*d.* for the liniment and 4*d.* for the dispensing fee. This pricing is in accordance with the official tariff and cannot, of course, be altered until this tariff is modified by the fall in the cost of drugs. The criticism of the panel committee was directed to the amount ordered on one prescription. It was considered that this quantity would be wasted, and that 2 oz., or at most 4 oz., was sufficient to order on one occasion. Only in exceptional cases would it be necessary to use more than 4 oz. of liniment in a week. The cost may appear a trifling matter in one or two cases, but considering the vast number of prescriptions given in one area the total amount may be a serious and unnecessary drain on the drug fund which is provided by the Treasury out of public money.

TO VENTILATE AND DEODORISE.

THE "Win-Sum" radiator, recently patented by Messrs. Tidd, Siday and Co., Ltd., of 180, Drury-lane, London, W.C., is a combination of an electric radiator and ventilating fan. The radiator forms the front of a box in which the metal fan is placed. Air is drawn into the apparatus and forced through the four porcelain and wire "elements," each of which can be turned on by a switch, thus regulating the degree of heating of the air. The manufacturers claim that the consumption of two electrical units an hour by this apparatus produces a uniform temperature of 60° F. on cold days in a room 20 ft. by 20 ft. by 12 ft. 6 in. In summer the agitation of the indrawn air and its subsequent distribution throughout the room by the agency of the revolving fan produces a cooling effect. The box-like apparatus is placed on the floor of the room near the door; it is especially intended for use in ordinary rooms of houses but can also be employed to disperse the pockets of stagnant air not infrequently found in certain parts of the "auditorium" of kinemas and other places of public entertainment. Slabs of absorbent porcelain material, to be soaked in eucalyptus or other volatile antiseptic, are provided in order that various odours may be added to the air forced through the radiator. The cost of the radiator is £20 retail.

CENTRAL HEATING IN CHICAGO.

AT the beginning of another winter and with coal at its present price it is of interest to note how the question of cold dwelling houses for the people is dealt with in foreign countries. A copy of the "Bulletin of the Chicago School of Sanitary Instruction," now before us, suggests at the first glance that in that city landlords in general are compelled by the sanitary authority to supply heat to their tenants, on the ground that otherwise a building is being maintained by them in a manner dangerous to health. It is to be gathered, however, from closer study of the article that at Chicago a large number of buildings divided into separate tenements are constructed in a manner which has been recommended here as desirable from the point of view of economy. Few, if any, such buildings, however, exist in the United Kingdom as far as we are aware. In Chicago the rooms in question have no source of heating, except that which is under the control of the landlord; although they are, or can be, supplied with gas apparatus sufficient for cooking. Chicago landlords, it is stated, are, as a rule, compellable by the terms of their leases to supply heating to their tenants, who can sue them for breach of contract. Where such covenants do not exist, or possibly where they do, the sanitary authority is prepared to act in the interest of the citizens. At present, as we have said, no such heating system is general in the United Kingdom, where most of the rooms let as living rooms are warmed by open fires or gas stoves. The flats, in London at all events, which are centrally heated, are lived in by tenants who are well able to enforce the terms of their leases. The experience of Chicago, however, may point to the desirability of considering the welfare of the tenant of working-class tenements, if and when any are constructed in such a way that the dwellers in them are dependent entirely upon the landlord for warmth in cold weather. It may, in other words, be desirable when any such buildings are erected to make it the duty of a public authority to see that they are sufficiently warmed to be safely inhabited. Tenants of the humbler class do not take leases with elaborate covenants, and often hold their rooms on such terms that they are not likely to bring their landlords into court.

C. B. W. has put his finger upon defaults that are common to every form of professional education. We are afraid that the medical profession would not welcome an examination in middle age to see whether a proper standard of knowledge was still being maintained.